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CONTRIBUTION TO THE FLORA OF THE NEW HEBRIDES

PLANTS COLLECTED BY S. F. KAJEWSKI IN 1928 AND 1929<sup>1</sup>

A. GUILLAUMIN

*Plate 43 and two text figures*

NYCTAGINACEAE

*Calpidia excelsa* Heimerl in Oesterr. Bot. Zeitschr. LXIII. 284 (1913).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest up to 600 m., no. 974 (coll. *J. P. Wilson*), Aug. 1929 (large tree up to 0.60 m. diameter; flowers small, pink; fruit a small round berry).—Already found on Tanna; also Fiji, Society? and Bismarck Islands, New Guinea, Timor and Malaysia.—Vernacular name "Moca."

Cited erroneously from Norfolk Island, Australia and New Zealand by confusion with *C. Brunoniana* Heimerl.

AMARANTACEAE

*Achyranthes aspera* Linnaeus, Sp. Pl. 204 (1753).

**T a n n a** : Lenakel, common in native gardens, rain-forest, at 150 m., no. 86, March 3, 1928 (plant about 1 m. high, with pretty variegated leaves of pink and brown).—Also New Caledonia, Loyalty Islands, North Australia, Norfolk Island, Fiji, Tonga, Samoa, Cook, Society, Marquesas, Union, Ellice, Mariana and Bismarck Islands and Malaysia.

POLYGONACEAE

*Polygonum minus* Hudson, Fl. Angl. ed. 1, 148 (1762).

**E r o m a n g a** : Dillon Bay, common in rain-forest at sea level, no. 339, May 29, 1928 (a plant growing in semi-cleared patches of rain-forest; mixed with Nunpar-lell, Ney-wass and Ne-cit-ersif for medicine for sickness on left side of stomach).—Also New Caledonia, Australia (Queensland, New South Wales, Victoria, Tasmania), Malaysia (Java) and Philippines (Luzon).—Vernacular name "Neta-pea."

<sup>1</sup> Continued from Vol. XIII. 30.



**Polygonum subsessile** R. Brown, Prodr. Fl. Nov. Holl. 419 (1810).

**E r o m a n g a** : Dillon Bay, common on banks of creeks and in swampy places at sea level, no. 367, June 5, 1928 (large plant up to 1.25 m. high; flowers white).—Also New Caledonia and Australia (Queensland, New South Wales, Victoria, Tasmania).—Vernacular name “Ukut-ukut.”

#### PIPERACEAE

**Piper latifolium** Forster f., Fl. Ins. Austr. Prodr. 5 (1786).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at sea level, no. 718, Feb. 9, 1929 (plant up to 2.5 m. high; fruit brown when ripe; this is the wild Kava and is not used for drinking purposes). **T a n n a** : Lenakel, common in heavy rain-forest soil at sea-level, no. 3, Feb. 20, 1928 (broad leaved plant about 1.25 m. high; leaves bright green).—**B a n k s G r o u p** : Vanua Lava, common in rain-forest at sea level, no. 436, July 9, 1928 (plant up to 1.5 m. high; fruit red when ripe).—Already found on Tanna, Efate and Epi; also Society, Tonga and Fiji Islands and in Timor.—Vernacular name “Wild Kava” (under no. 718) and “Wild N’Kava” (under no. 436).

**Piper methysticum** Forster f., Pl. Esc. 76 (1786).

**T a n n a** : Lenakel; common in rain-forest at 150 m., no. 119, March 6, 1928 (plant 1.5 m. high; the roots make the native intoxicant N’Kava).—Already found on Efate; also New Guinea, Bismarck, Fiji, Society, Tonga, Marquesas and Wallis Islands and Hawaii.—Vernacular name “N’Kava.”

**Piper miniatum** Blume in Verh. Batav. Genostsch. xi. 166 (1826).

**B a n k s G r o u p** : Vanua Lava, common in rain-forest at 500 m., no. 463, July 10, 1928 (parasite on rain-forest trees, fruit red when ripe).—Also New Guinea, Moluccas, Malaysia and Philippines.

**Peperomia leptostachyoides** C. De Candolle in Bull. Herb. Boiss. ser. 2, VIII. 330 (1908).

**E r o m a n g a** : Dillon Bay, common on rocks in shade of scrub or rain-forest at sea level, no. 359, June 4, 1928 (plant about 7 cm. high; sap of leaf used to make the faces of the natives glossy). **E f a t e** : Fila Island, Vila, common in rain-forest of sea shore, no. 188, April 14, 1928 (small plant growing on rocks).—Already found in the New Hebrides.—Vernacular name “Nimtoro-orah” under no. 359).

#### CHLORANTHACEAE

**Ascarina lanceolata** Hooker f. in Jour. Linn. Soc. i. 127 (1856).

**T a n n a** : Mt. Tokosh Meru, common in rain-forest at 1000 m., no. 152, March 15, 1928 (tree up to 10 m. high). **A n e i t y u m** :



Anelgauhat Bay, common in rain-forest at 360 m., no. 863, March 5, 1929 (small tree up to 9 m. high; flowers yellow; bark brown and fissured).

The plant from Tanna differs from the typical form of the Fiji and Samoa Islands in the larger leaves (up to 10.5 cm. by 4.5 cm.) and the longer petioles (up to 2.5 cm.), while the plant from Aneityum has narrower lanceolate leaves (up to 12 cm. by 3 cm.).

#### MYRISTICACEAE

*Myristica* aff. *M. Hollrungii* Warburg.

**B a n k s G r o u p** : Vanua Lava, common in rain-forest at sea level, no. 422, July 6, 1928 (tree up to 25 m. high; fruit brown, 4.5 cm. long, 4 cm. diam.)

No *Myristica* had been found in the New Hebrides, though Warburg (Monog. Myrist. p. 486) indicates that *M. subulata* Miq. of the Aru Island and New Guinea might exist perhaps also in the New Hebrides.

#### MONIMIACEAE

*Hedycaria neo-ebudica* Guillaumin, sp. nov.

Arbor parva, 10 m. alta, ramis gracilibus glabris, foliis oppositis vel 3-nis atro-viridibus papyraceis oblongis vel oblongo-elongatis (usque ad 16 cm.  $\times$  5.5 cm.) apice acute acuminatis basi obtuse cuneatis vel sub-rotundatis integerrimis utrinque glabris, nervis 7-10-jugis a venis parum distinctis procul a margine arcuatis tenuissimis subtus tantum prominulis, petiolo 2-2.5 cm. longo; inflorescentiae 3-4.5 cm. longae, receptaculo fructifero plano supra puberulo, drupis maturite nigris ovoideis (0.8 cm.  $\times$  0.6 cm.).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 125 m., no. 811 (typus), Feb. 23, 1929 (small tree up to 9 m. high; leaves dark green; fruit 8 mm. long, 6 mm. in diam., black when ripe).

**E r o m a n g a** : Dillon Bay, common in rain-forest at 400 m., no. 322, May 28, 1928 (tree about 8 m. high; fruit 1.25 cm. long, turbinate with blunted point, very scarce).—Vernacular name "Neyyar-riverum" (under no. 322).

This new species approaches *H. denticulata* Perk. & Gilg of the Solomon and perhaps the Tonga Islands, but is readily distinguished by the receptacle being pubescent above. The specimen from Eromanga differs from the type in the oval leaves (not exceeding 10  $\times$  4.5 cm.) with shorter acumen and broader base and in the shorter, 1-2 cm. long petiole.

*Hedycarya*, sp. nov.?

**T a n n a** : Lenakel, common in rain-forest at 200 m., no. 90, March 5, 1928 (specimens from tree about 6 m. high).



## LAURACEAE

**Cryptocarya Wilsonii** Guillaumin, sp. nov.

Arbor parva, trunco 30 cm. diam., ramis glabris, foliis ovatis (usque ad 19 cm.  $\times$  10 cm.) breviter acuminatis basi subito cuneatis glabris, nervis lateralibus 5–8-jugis, petiolo 1–1.5 cm. longo. Paniculae usque ad 6 cm. longae axillares, ramulis pedicellisque breviter rufo-velutinis, floribus minimis (1 mm. longis) breviter pedicellatis (sub 1 mm.) vel sessilibus, bracteis minimis lanceolatis in utraque pagina rufo-velutinis, perianthio campanulato fere usque ad medium 6-lobato, segmentis ovatis carinatis extra dense intus sparsius rufo-velutinis, staminibus generis, subsessilibus, connectivis pilosis, antheris lanceolatis apice muticis, staminodiis omnino sessilibus staminibus similibus sed latioribus apiceque acutis, ovario glabro, stylo subulato staminum apicem subattingente; fructus transverse ellipsoidei (2 cm.  $\times$  2.6 cm.  $\times$  2 cm.), pericarpio tenui.

**A n e i t y u m** : Anelgauhat Bay, scarce in rain-forest at 175–500 m., no. 951 (coll. *J. P. Wilson*) Sept. 1929 (low tree to 30 cm. in diam., leaves large; flowers small, yellow; fruit round 2.5 cm. in diam., seeds eaten by natives).—Vernacular name “Inceohp.”

The fruit resembles particularly that of *C.*<sup>1</sup> *obcordicarpa* Lecard ex Guillaumin of New Caledonia.

**Cryptocarya** sp.

**A n e i t y u m** : Anelgauhat Bay, scarce in rain-forest at 300 m., no. 950 (coll. *J. P. Wilson*) Sept. 1929 (small tree; leaves small, pointed, with yellow midrib; flowers white; fruit round, 1.8 cm. diam.)—Vernacular name “Ingeyho.”

**Beilschmiedia** sp.

**A n e i t y u m** : west coast, common in rain-forest up to 450 m., no. 964 (coll. *J. P. Wilson*) Sept. 1929 (tall tree up to 60 cm. in diam., leaves medium; flowers small, white; fruit red, 2 cm. long, 1.7 cm. in diam.)—Vernacular name “Nipicgow.”

**Endiandra aneityensis** Guillaumin, sp. nov.

Arbor parva, 10 m. alta, trunco 22 cm. diam., ramis compressis cortice rubro, novellis rufo-puberulis cito glabris, foliis ovatis (8–12 cm.  $\times$  3–5 cm.) lutescente viridibus apice basique cuneatis pergamentaceis vel leviter coriaceis costae basi excepta glabris penninerviis, in utraque pagina dense reticulato-nervosis, petiolo 1 cm. longo puberulo. Paniculae axillares, circa 5 cm. longae, sparse puberulae, floribus coeruleis distincte (1–3 mm.) pedicellatis, peri-

<sup>1</sup>Owing to a typographical error *C. lifuensis* and *C. macrocarpa* (Bull. Soc. Bot. France, LXXI. 1103. 1925) have been attached to the genus *Cassytha*, but by referring to p. 1105 one finds these species in the key of *Cryptocarya*.



anthio sphaerico 2 mm. diam. extra sparsissime puberulo intus glabro, apice lobis 6 ovato-triangularibus 0.5 mm. longis reflexis glaberrimis, staminibus 3 perianthii ore erectis fere 1 mm. longis glabris, filamentis basi utrinque glandula parva globosa donatis, antheris ovatis, staminodiis 3 glandulis simillimis, ovario glabro ovato in stylum attenuato, stigmatate 2-lobo. Fructus nigri, ellipsoidei (3.5 cm.  $\times$  2.5 cm.).

*A n e i t y u m* : Anelgauhat Bay, common in rain-forest at 25 m., no. 704 (typus), Feb. 4, 1929 (large tree up to 20 m. high, leaves light green); common in rain-forest at 175–500 m., no. 955 (coll. *J. P. Wilson*), Sept. 1929 (low tree up to 21.5 cm. diam., flowers small, blue; fruit 3 cm. long, 2.5 cm. in diam., edible, eaten by natives).— Vernacular name “Incitray” (under no. 955).

This species is very remarkable on account of the spherical rather than campanulate shape of the tube of the perigone.

*Litsea aneityensis* Guillaumin, sp. nov.

Arbor magna, 13 m. alta, trunco 25 cm. diam., innovationibus fulvo-tomentosis cito glabris, foliis ovatis (5.5–10 cm.  $\times$  3–6 cm.) leviter coriaceis apice acutis vel subacuminatis basi cuneatis penninerviis, nervis circa 6-jugis, venis subtus dense reticulatis, petiolo 1–1.5 cm. longo. Umbellulae fasciculatae, 1.2 cm. longae, axillares, albae, 4–5-florae, pedunculo 5–8 mm. longo, involucri phyllis 4–5 mm. longis ovatis margine parce ciliatis, pedicello usque ad 5 mm. longo, perigonii tubi lobis 0, staminodiis circa 6, antheris ad laminam lineari-lanceolatam reductis, omnibus filamentis 2-glandulosis dorso sparse ciliatis, ovario glabro. Fructus rubri, ovoidei (2 cm.  $\times$  1.5 cm.) in tubo staminodifero calycem simulante 7 mm. diam. insidentes.

*A n e i t y u m* : Anelgauhat Bay, common in rain-forest at 70 m., no. 748 (typus), Feb. 12, 1929 (large tree up to 12 m. high; stamens and anthers white); southwest, common in rain-forest at 60 to 275 m., no. 960 (coll. *J. P. Wilson*), Sept. 1929 (low tree up to 40 cm. diam.; flowers small, white; fruit red, 2 cm. long, 1.8 cm. in diam.)— Vernacular name “Incipet” (under no. 960).

This species resembles most *L. minor* Teschn. of New Guinea.

*Litsea tannaensis* Guillaumin, sp. nov.

Arbor circa 7 m. alta, innovationibus fulvo-tomentosis citissime glabris, foliis ovatis (4.5–7.5 cm.  $\times$  2.5–4 cm.) apice obtusis vel obtuse acuminatis basi late cuneatis leviter coriaceis penninerviis, nervis 5–6-jugis, venis immersis fere inconspicuis, petiolo 0.5–1 cm. longo. Umbellulae singulae vel fasciculatae, ad axillas foliorum vel foliorum delapsorum, 1 cm. longae, albae, 5-florae, pedunculo



5 mm. longo, involucri phyllis 4, 3 mm. longis ovatis margine parce ciliatis, pedicello brevi vel 0, perianthii tubi lobis 0, staminibus 6-9, 3-6 longioribus filamentis antheris 3-plo longioribus glandulis 2 globosis pedicellatis ad apicem munitis, 3-0 interioribus brevioribus filamentis antheris 2-plo longioribus, nonnunquam glandulis pedicellatis ad apicem destitutis, pistillo 0.

**T a n n a** : Lenakel, common in rain-forest at 200 m., no. 109, March 6, 1928 (tree about 7 m. high; flowers white).

This species seems nearest to *L. maluensis* Teschn. of New Guinea from which it is chiefly distinguished by the perianth having no lobes.

#### HERNANDIACEAE

**Hernandia cordigera** Viellard in Ann. Sci. Nat. sér. 4, XVI. 62 (1861).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 50 m., no. 703, Feb. 4, 1929 (large tree up to 20 m. high; petals white; used by the natives for canoe-making). **T a n n a** : Lenakel, common in rain-forest at 150 m., no. 125, March 7, 1928 (tree 20 m. high, 70 cm. in diam.). **E r o m a n g a** : Dillon Bay, centre of island, common in rain-forest at 400 m., no. 341, June 1, 1928 (large tree up to 20 m. high; petals dirty cream-colored; fruit 4.5-5.5 cm. long tapering to a blunt point; wood white, soft and used for canoe building).—Also in New Caledonia.

**Hernandia peltata** Meisner in De Candolle, Prodr. xv. pt. i. 263 (1864).

**A n e i t y u m** : Utgi, common along seashore at 90 m., no. 1001 (coll. *J. P. Wilson*), Sept. 1929 (large tree to 1 m. diam.; flowers yellow, clustered; fruit round, red, clustered). **E r o m a n g a** : Dillon Bay, common in rain forest and along seashore, sea level, no. 307, May 25, 1928 (large straight tree up to 25 m. high, 75 cm. diam.; petals white, stamens yellow, stigma pale purple; this tree has a very soft wood and is used for canoe-building). **B a n k s G r o u p** : Vanua Lava, common in rain-forest at sea level, no. 435, July 10, 1928 (large tree, wood used by natives for canoes).—Already found on Efate; also New Caledonia, Fiji, Tonga, Wallis, Cook, Society, Marquesas, Union, Ellice, Marshall, Mariana, Santa Cruz, Solomon, Bismarck and Admiralty Islands, New Guinea and Malaysia.—Vernacular names "Nogogu" (under no. 1001) and "Nehele" (under no. 307).

#### PROTEACEAE

**Kermadecia lutea** Guillaumin, sp. nov.

Arbor magna, 20 m. alta, ramis validis primum dense fulvo-pilosis deinde glabris, foliis ovato-lanceolatis (usque ad 14 cm. × 6 cm.)



primum dense fulvo-pilosis deinde glabris apice acute attenuatis basi cuneatis supra lutescentibus coriaceis, costa supra lutea, nervis 4-jugis subtus prominentibus, venis reticulatis subtus prominentibus, petiolo usque ad 4.5 cm. longo. Inflorescentiae axillares, foliis subaequilongae primum dense fulvo-pilosa, deinde glabrae, racemosae, floribus luteis in ramo circa 3 mm. longo 2-nis oblique sessilibus, bracteis 0, perigonii tubo recto basi oblique dilatato extra fulvo-piloso 1 cm. longo per anthesin uno latere fisso, segmentis concavis lanceolatis dein solutis, antheris ovatis sessilibus, disco unilaterali carnosio, ovario oblique sessili glabro ut stylo cylindrico, stigmatate leviter incrassato. Fructus racemosi, in pedicello robusto 1 cm. longo singuli, curvatim ovati, leviter compressi (3-4 cm.  $\times$  2-3 cm.  $\times$  1.5-2 cm.), apice apiculati, nigri, exocarpio tenuissimo, endocarpio 2 mm. crasso osseo, semine 1 valde compresso.

*A n e i t y u m* : Anelgauhat Bay, common in rain-forest 275 m., no. 901 March 11, 1929 (large tree up to 18 m. high; leaves with light yellow midribs; fruit 4 cm. long, 2.75 cm. in diam.; wood beautifully grained similar to the Queensland silky oak); no. 828, Feb. 28, 1929 (tall tree up to 12 m. high; fruit 3 cm. long, 2.5 cm. in diam., yellow when ripe).—*T a n n a*: Mt. Tokosh Meru, rain-forest, 400 m., no. 167 (typus) March 15, 1928 (flowers yellow; fruit black).—Vernacular name "Silky Oak" (under no. 167).

This species resembles, particularly in its leaves, *Adenostephanus austro-caledonicus* Brongn. & Gris of New Caledonia, which, as also Bentham and Hooker believe, must be a *Kermadecia*, but its flowers are unknown.

***Grevillea elaeocarpifolia* Guillaumin, sp. nov.**

Arbor magna, 12 m. alta, ramis crassis cinereis primum rubiginose tomentosus deinde glabris, foliis lanceolatis (usque ad 14 cm.  $\times$  3.5 cm.) apice acutis mucronulatisque basi acutis, nervis 15-18-jugis tenuibus infra prominulis, venis reticulatis immersis, petiolo circa 1 cm. longo primum rubiginose tomentoso mox glabro. Inflorescentiae e ramis veteribus ortae, racemosae, usque ad 15 cm. longae, sparse tomentosae, floribus luteis pedicello 1 cm. longo suffultis, perigonii tubo basi oblique dilatato extra sparse puberulo 1.5 cm. longo per anthesin uno latere fisso, segmentis ovatis concavis tarde solutis, antheris sessilibus ovatis, disco unilaterali carnosio, ovario stipitato stipite 3 mm. longo, stylo 13-14 mm. longo apice incrassato, stigmatate terminali conico. Fructus indehiscentes, maturitate lutei, curvatim ovoidei, lateraliter compressi (2.5 cm.  $\times$  2.3 cm.  $\times$  1.8 cm.), apice apiculati, pericarpio usque ad 5 mm. crasso lignoso, seminibus 2 plano-compressis orbicularibus margine alatis.



**T a n n a** : Lenakel, not common in rain-forest at 200 m., no. **95** (typus) March 5, 1928 (tree about 12 m. high; flowers yellow; fruit yellow when ripe; nuts eaten by natives). **E r o m a n g a** : Dillon Bay, not common in rain-forest at 400 m., no. **350**, June 1, 1928 (tree up to 10 m. high; fruit yellow when ripe; nuts eaten by natives).—Vernacular names “Ngye-ngye” (under no. 95) and “Ugkomukom” (under no. 350).

The genus is essentially Australian and New Caledonian (with the exception of the Loyalty Islands), but has two representatives in New Guinea.

#### THYMELACEACEAE

**Wikstroemia viridiflora** Meisner in Denkschr. Bot. Ges. Regensb. III. 286 (1841).

**T a n n a** : Lenakel, common in rain-forest at 200 m., no. **107**, March 6, 1928 (small shrub 2 m. high; flowers cream-colored). **E r o m a n g a** : Dillon Bay, common in poor red soil, bracken country at 300 m., no. **302**, May 24, 1928 (small shrub 2–3 m. high; flowers cream-colored; bark thrown into pools to stupefy fish so they can be caught by hand).—Also New Caledonia, Loyalty, Fiji and Cook Islands and Australia (Queensland, New South Wales, North Australia).—Vernacular name “Tao-wap” (under no. 302).

#### LORANTHACEAE

**Elytranthe banksiana** Guillaumin, sp. nov.

Glaberrima, ramis gracilibus, foliis spathulatis (5–8 cm.  $\times$  2–2.5 cm.) apice rotundatis basin versus in petiolum indistinctum attenuatis crassis, nervis immersis. Inflorescentiae racemosae (?), pedicello 5 mm. longo, bractea late ovata 1 mm. longa, calycis parte libera tubum 1 mm. longum leviter patulum formante, petalis aureis apice rubris, tubo 4 cm. longo, supra medium sensim dilatato, longitudinaliter costato, lobis 5–6 linearibus reflexis 1.5 cm. longis, staminibus 5–6 erectis corollae lobis brevioribus, antheris filamentis leviter brevioribus linearibus, ovario omnino infero, stylo filiformi basi conice incrassato stamina superante, stigmata capitato.

**B a n k s G r o u p** : Vanua Lava, common in rain-forest at 300 m. no. **453**, July 10, 1928 (parasitic plant growing on a tree where sunlight is available; very pretty golden petals with red ends).

**Loranthus aneityensis** Guillaumin, sp. nov.

Ramis gracilibus cinereis, foliis obovatis (3–4 cm.  $\times$  2–2.5 cm.) apice rotundatis basi plus minusve subito in petiolum indistinctum cuneatis valde coriaceis, venis inconspicuis. Inflorescentiae 3 cm. longae, umbellatim cymosae, ramis rubiginoso-puberulis, bractea



triangulari acuta vel ovata extra dense rubiginos-opuberula, calycis parte libera tubum brevissimum campanulatum formante, petalis aurantiacis liberis 5 lineari-lanceolatis 2 cm. longis extra sparse puberulis, staminibus 5 erectis corollae lobis aequilongis, antheris filamentis aequilongis apice muticis, ovario omnino infero, obconico, dense rubiginoso-puberulo, stylo filiformi petalis aequilongo, basi disco annulari cincto, stigmatate capitellato. Fructus ovoidei (5 mm.  $\times$  4 mm.), minimi, rubiginose puberuli.

*Aneityum*: Anelgauhat Bay, common in rain-forest at 300 m., no. 753, Feb. 12, 1929 (parasite growing upon trees in the open partly cleared scrub land; flowers orange-colored).

*Loranthus ficivorus* Guillaumin, sp. nov.

Ramis sat robustis dense rugose lenticellatis cinereo-fulvis, foliis late obovatis (5–7 cm.  $\times$  3.5–5 cm.) apice rotundatis basi in petiolum indistinctum cuneatis valde coriaceis, venis 2-jugis immersis. Inflorescentiae 4 cm. longae, umbellatim cymosae, ramis fulvo-puberulis, bractea ovata extra fulvo-puberula, calycis parte libera tubum brevissimum extra fulvo-puberulum formante, petalis basi roseis apice luteis liberis 5 linearibus ad 2.5 cm. longis, staminibus corollae lobis leviter brevioribus, antheris filamentis 1.5-plo brevioribus, connectivo apice leviter globose producto, ovario omnino infero turbinato fulvo-puberulo, stylo filiformi petalis aequilongo, basi disco annulari cincto, stigmatate capitellato.

*Tanna*: Lenakel, common in rain-forest at 60 m. no. 94, March 5, 1928 (parasitic on *Ficus*; flowers pink at base with yellow tips).

The specimen no. 87, March 3, 1928, from *Tanna*: Lenakel, common in rain-forest at 150 m. (commonly parasitic on rain-forest trees) with less thick leaves and ellipsoid fruit (1 cm.  $\times$  0.6 cm.) probably belongs to the same species.

#### SANTALACEAE

*Santalum austro-caledonicum* Vieillard in Ann. Sci. Nat. sér. 4, XVI. 61 (1861).

*Aneityum*: Anelgauhat Bay, common in rain-forests at 180 m., no. 814, Feb. 23, 1929 (small tree up to 9 m. high; flowers cream-colored; fruit purple when ripe; this is exported as the sandalwood of commerce). *Eromanga*: Dillon Bay, common in rain-forest at 300 m., no. 287, May 23, 1928 (tree up to 20 m. high; leaves light green above, silvery underneath; flowers cream-colored; fruit 1.5 cm. long, 1 cm. in diam., black when ripe; the sandalwood of commerce).—Already recorded from *Aneityum* and *Eromanga*; also New Caledonia and Loyalty Islands.—Vernacular name “Worlu” (under no. 287).



## EUPHORBIACEAE

**Euphorbia obliqua** Endlicher, Prodr. Fl. Norf. 85 (1833).

**E r o m a n g a** : Dillon Bay, common on rocky beach at sea level, no. 257, May 15, 1928 (small plant about 25 cm. high, growing in the crevices of rocks; flowers white; sap used in conjunction with charcoal for tattooing, producing blue marks).—Already found on Aneityum and on Eromanga; also New Caledonia, Loyalty, Norfolk and Tonga Islands.—Vernacular name “Uripatepu.”

**Phyllanthus**, sp. nov. ?

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest up to 150 m., no. 912, March 11, 1929 (small tree up to 6 m. high; flowers brown).

**Phyllanthus** sp.

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at sea level, no. 908, March 11, 1929 (small tree up to 6 m. high; fruit 0.5 cm. long, light pink when ripe). **T a n n a** : Lenakel, common in rain-forest at 100 m., no. 73, March 1, 1928 (small tree about 8 m. high). **E r o m a n g a** : Dillon Bay, common in rain-forest at 300 m., no. 274, May 17, 1928 (small tree up to 10 m. high; fruit red; leaves crushed and used by natives for fevers).

This seems to belong to the same group as *P. Gaudichaudii* Muell. Arg. of the Samoa and Tonga Islands, New Guinea, Aru Island and the Mariana Islands.—Vernacular name “Narmlee” (under no. 274).

**Glochidion tannaense** Guillaumin, sp. nov.

Arbor, ramulis leviter compressis glabris, foliis lanceolatis (usque ad 7 cm.  $\times$  3 cm.) apice basique acutis rigide membranaceis infra pallidioribus, nervis circa 7-jugis tenuissimis, petiolo 4–5 mm. longo, stipulis lineari-lanceolatis cito caducis petiolo 2-plo brevioribus, floribus ♀ circa 6, pedicellis circa 5 mm. longis gracilibus apicem versus leviter incrassatis, tepalis 6 vix 1 mm. longis ovatis obtusis, ovario glabro 10-loculari, columna stylari conica superne angustata et ovario continua.

**T a n n a** : Lenakel, common in rain-forest at 200 m., no. 91, March 5, 1928 (tree of large dimensions with numerous roots of the banyan type; flowers yellow).

Though the staminate flowers are not known, there can be no doubt, that it is a *Glochidion* which should be placed near *G. lucidum* Bl. of Malaysia and *G. novo-guineense* K. Schum. of New Guinea. Could this be the *Glochidion* sp. found on Tanna by Forster?

**Hemicyclea Deplanchei** (Brongn. & Gris) Baillon apud Guillaumin in Ann. Mus. Col. Marseille, sér. 2, ix. 224 (1911).



*Aneityum*: Anelgauhat Bay, common in rain-forest at 150 m., no. 933, March 17, 1929 (large tree up to 18 m. high; fruit 1.4 cm. long, 1 cm. in diam., yellow when ripe).—Also New Caledonia.

*Bischofia javanica* Blume, Bijdr. 1168 (1826).

*Eromanga*: Dillon Bay, common in rain-forest at sea level, no. 310, May 26, 1928 (large tree up to 25 m. high; bark is boiled in salt water and applied to cuts).—Also New Caledonia, Australia (Queensland), Fiji, Tonga, Cook and Society Islands and Malaysia.—Vernacular name "No-ghor."

*Aleurites moluccana* Willdenow, Sp. Pl. iv. 590 (1805).

*Eromanga*: Dillon Bay, common in rain-forest at sea level, no. 242, May 14, 1928 (very fine tree with a straight barrel up to 20 m. high; kernel of fruit threaded on a cocoanut fibre used as a candle).—Already found on Efate; also New Caledonia, Loyalty Islands, Australia (Queensland), New Zealand, Fiji, Tonga, Samoa, Cook, Society, Marquesas, Gambier and Mariana Islands, New Guinea, Malaysia and Hawaii.—Vernacular name "Candle-nut."

*Croton insularis* Baillon in Adansonia, II. 217 (1861-62).

*Aneityum*: Aname, locally common in lower ranges up to 150 m., no. 988 (coll. *J. P. Wilson*), Sept. 1929 (small tree to 23 cm. in diam.; leaves broad; flowers small, brown; fruit small 0.6 cm. in diam.). *Eromanga*: Dillon Bay, common in rain-forest at sea-level, no. 267, May 17, 1928 (small tree up to 15 m. high; leaves green above, silvery brown underneath).—Also New Caledonia, Loyalty Islands, Australia (Queensland, New South Wales).—Vernacular names "Nalipes" (under no. 267), "Imrath" (under no. 988).

*Codiaeum variegatum* (L.) Bl. var. *moluccanum* (Decne.) Mueller Arg. in DeCandolle, Prodr. xv. pt. II. 1119 (1866).

*Banks Group*: Vanua Lava, common in rain-forest at sea level, no. 409, June 5, 1928 (small tree up to 12 m., high; flowers white); no. 423, July 6, 1928 (small tree up to 7 m. high; leaves dark green).

*Codiaeum variegatum* (L.) Bl. var. *pictum* (Lodd.) Mueller Arg. in DeCandolle, Prodr. xv. pt. II. 1119 (1866).

*Tanna*: Lenakel, common in rain-forest at 100 m. no. 31, Feb. 21, 1928 (shrub up to 6 m. high, with pretty variegated leaves).

This species has been found already on Aneityum, Tanna, Efate, and Mallicolo; also New Caledonia, Loyalty Islands, Australia (Queensland), Fiji, Tonga, Samoa, Cook, Marshall, Caroline, Mariana, Santa Cruz, Solomon, Bismarck and Admiralty Islands, New Guinea and Malaysia.



**Alphandia furfuracea** Baillon in *Adansonia*, xi. 86 (1873).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 90 m. no. 809, Feb. 23, 1929 (large tree up to 12 m. high; leaves dark green, midrib yellow; flowers creamy yellow; fruit 2.5 cm. long, 2 cm. in diam., light yellow).—Also New Caledonia.

**Fontainea Pancheri** (Baill.) Heckel, *Thèse Inaug. Montpell.* 1870, apud Baillon in *Adansonia* xi. 80 (1873).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at sea level, no. 906, March 11, 1929 (small tree up to 9 m. high; fruit 5 cm. long, 4 cm. in diam., orange-colored when ripe; this tree contains a remarkable poison throughout and is used for poisoning fish.)—Also New Caledonia and Loyalty Island.

**Claoxylon insulanum** Mueller Arg. in *Linnaea* xxxiv. 164 (1865-66).

**A n e i t y u m** : south west, common in rain-forest at 60-300 m. no. 958A (coll. *J. P. Wilson*), Sept. 1929 (small tree, trunk 22.5 cm. in diam.; flowers small, white; fruit a small berry). **E f a t e** : Undine Bay, common in rain-forest at 500 m., no. 232, April 28, 1928 (tree 10-15 m. high).—Also New Caledonia and Loyalty Islands.—Vernacular name "Namchrai" (under no. 958A).

**Claoxylon taitense** Muell. Arg. var. **neo-ebudicum** Guillaumin, var. nov.

A planta taitensi differt racemis brevioribus (2.5-6 cm. longis), floribus 3-5-fasciculatis, glabris, petioli glandulis subulatis glandulis minimis adjunctis.

**E r o m a n g a** : Dillon Bay, common in rain-forest at 400 m., no. 347, June 1, 1928 (tree about 15 m. high; flowers white).—Vernacular name "Ney-emptey."

The type of the species occurs in Tahiti and New Caledonia.

**Acalypha grandis** Benthham in *Lond. Jour. Bot.* ii. 232 (1843).

**T a n n a** : Lenakel, common in heavy rain-forest soil at sea level, no. 16, Feb. 21, 1928 (small tree growing in semi-cleared land).—Already found on Aneityum; also New Caledonia, Loyalty, Fiji, Wallis, Tonga, Samoa, Bismarck and Admiralty Islands, New Guinea, Moluccas and Malaysia.

**Acalypha neo-caledonica** Mueller Arg. in *DeCandolle, Prodr.* xv. pt. ii. 812 (1866).

**T a n n a** : Lenakel, common in rain-forest soil at sea level, no. 21, Feb. 21, 1928 (small shrub up to 4 m. high). **E r o m a n g a** : Dillon Bay, common in rain forest at 300 m., no. 383, June 8, 1928 shrub up to 5 m. high).—Already found on Aneityum; also New



Caledonia and Loyalty Islands.—Vernacular name “Nau-nompe pura-puri” (under no. 383).

**Acalypha** sp., an *A. Forsteriana* Muell. Arg.?

**E r o m a n g a** : Dillon Bay, common in rain-forest at sea level, no. 248, May 15, 1928 (small tree up to 5 m. high).—Vernacular name “Nau-numpey.”

Identical with no. 1 of Levat from Efate, vernacular name “Noc-fis.”

*Acalypha Forsteriana*, endemic in the New Hebrides, has been already found on Tanna and Efate.

**Cleidion angustifolium** Pax & K. Hoffmann in Engler, Pflanzenr. iv.-147. pt. vii. 293 (Euphorbiac.) (1914).

**A n e i t y u m** : south west, common in lower hills up to 60 m. no. 959 (coll. *J. P. Wilson*), Sept. 1929 (small tree up to 25 cm. diam.; flowers very small, white; fruit a small berry).—Also New Caledonia.—Vernacular name “Nijivit.”

The character “ovarium sparsissime adpresse pilosum” brings the species not near *C. spathulatum* Baill. but near *C. Vieillardii* Baill. var. *acutifolium* Muell. Arg.

**Cleidion Vieillardii** Baill. var. *acutifolium* Mueller Arg. in De Candolle, Prodr. xv. pt. ii. 986 (1866).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 240 m., no. 909, March 11, 1929 (small tree up to 9 m. high, flowers minute, white).—Also New Caledonia.

**Macaranga Tanarius** (L.) Mueller Arg. in DeCandolle, Prodr. xv. pt. ii. 997 (1866).

**T a n n a** : Lenakel, common in heavy rain-forest soil at sea level, no. 17, Feb. 21, 1928 (tree up to 15 m. high).—Already found on Tanna; also New Caledonia, Australia (Queensland, North Australia, New South Wales), Bismarck Islands, New Guinea, Moluccas and Malaysia.

The plant from Tanna corresponds to var. *genuina* Muell. Arg., while the plant of New Caledonia is pubescent, but as indicated by J. J. Smith and later by Pax and Hoffmann, all intermediate stages are found.

It is very probable that *Ricinus Mappa* Forst. also collected on Tanna (Forster, no. 213) belongs to this species.

**Macaranga** sp.

**T a n n a** : Lenakel, common in rain-forest soil at 100 m., no. 37, Feb. 21, 1928 (tree 12–15 m. high, about 20–40 cm. diam.). **E r o m a n g a** : Dillon Bay, common in rain-forest at 300 m., no. 319,



May 28, 1928 (tree about 10 m. high; dried leaf bandaged over sore to heal it).—Vernacular name “Norvo-among” (under no. 319).

**Macaranga** sp.

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at sea level, no. 708, Feb. 10, 1929 (small tree up to 10 m. high; leaves dark green above, silvery underneath; stamens and anthers cream-colored). **B a n k s G r o u p** : Vanua Lava, common in rain-forest at sea level, no. 440, July 9, 1928 (small tree up to 7 m. high).

These four specimens all staminate possibly belong to the same species.

**Homalanthus ebracteatus** Guillaumin, sp. nov.

Arbor 8 m. alta, trunco 15 cm. diam. omnino glabra, ramis tortuosis, foliis rhomboideo-ovatis (2–3.5 cm.  $\times$  2–4 cm.) apice rotundatis vel brevissime acutis basi obtuse truncatis, petiolo 1–3 cm. longo apice 2-glanduloso. Racemi erecti, circa 4 cm. longi, floribus singulis  $\sigma^7$  ebracteatis,  $\text{f}$  bractea naviculari apice cuspidata basi cordata breviter pedicellata involuocratis, floribus  $\sigma^7$  patentibus, pedicello 2 cm. longo supra medium vel ad apicem glandulis 2 hemisphaericis notato, sepalo parvo reniformi, antheris circa 20, floribus  $\text{f}$  ad racemi basin 1–2 nutantibus, pedicello 3 mm. longo, tepalis 3 semi-circularibus bene distinctis, stylo brevi, stigmatibus 3-plo longioribus apice 2-lobis. Fructus ovoideo-compressi, carpellorum dorso carinatis.

**T a n n a** : Lenakel, common in rich rain-forest soil at 200 m. no. 47, Feb. 24, 1928 (tree about 8 m. high, about 15 cm. diam.).

The pedicels of the staminate flowers without bracts at the base but furnished with two glands below the middle represent an entirely new type in the genus which is worthy to constitute a new series **EBRACTEATI**.

**Homalanthus longipes** Pax & K. Hoffmann in Engler, Pflanzenr. iv.-147. pt. v. 51 (Euphorbiac.) (1912). **E r o m a n g a** : Dillon Bay, common in rain-forest at sea level, no. 263, May 17, 1928 (tree up to 15 m. high; leaves silvery underneath).—Already found on Eromanga.—Vernacular name “Nemtar-bwar.”

The specimen lacks pistillate flowers.

**Homalanthus nutans** (Forst.) Pax var.

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 600 m., no. 976 (coll. *J. P. Wilson*), Aug. 1929 (tree to 0.30 m. diam.; flowers very small, yellow; fruit flattened 1 cm. long, 0.7 cm. in diam.).—Already found on Tanna, Eromanga and Efate; also New Caledonia, Loyalty, Fiji, Tonga, Samoa, and Society Islands.—Vernacular name “Ettaing.”



**Excoecaria Agallocha** Linnaeus, Syst. Nat. ed. 10, 1288 (1759).

**A n e i t y u m** : Anelgauhat Bay, common along seashore, no. 694, Feb. 4, 1929 (tree up to 15 m. high; sap milky). **T a n n a** : Lenakel, common in heavy sandy soil of seashore, no. 1, Feb. 20, 1928 (spreading tree about 12 m. high, with numerous spreading stems or coppice growth; fruit dark brown when ripe; sap milky).—Already found on Efate; also New Caledonia, Loyalty Islands, Australia (Queensland, North Australia), Norfolk Island, Fiji, Tonga, Caroline, Mariana, Solomon and Bismarck Islands, New Guinea and Malaysia.

#### BALANOPSISIDACEAE

**Trilocularia pedicellata** Guillaumin, sp. nov.

Arbor parva, ultra 6 m. alta, ramis erectis teretibus glabris, foliis alternis ad ramulorum apicem congestis ovatis (4–7 cm.  $\times$  2–4 cm.) valde obtusis basi rotundatis leviter coriaceis, marginibus recurvatis, nervis vix conspicuis concoloribus, petiolo 0.5–1 cm. longo. Fructus 1 cm. pedicellati, bracteis 4 minimis sparsis, bracteis involucrantibus 8, interioribus sensim majoribus et 5 mm. longis, orbicularibus margine ciliatis, glandi simillimi, circa 1.5 cm.  $\times$  1 cm., stylo 3 usque ad basin 2-fidorum reliquiis coronati, loculis 3.

**B a n k s G r o u p** : Vanua Lava, common in rain-forest on tops of high mountains at 600 m., no. 476, July 12, 1928 (small tree up to 6 m. high).

This species on account of its pedicelled fruit is very distinct from *T. sparsiflora* Schlechter of New Caledonia, the only species of the genus hitherto known.

The family thus was represented outside of New Caledonia only by a single species found only once in Queensland.

#### CELTIDACEAE

**Celtis paniculata** Planchon in Ann. Sci. Nat. sér. 3, x. 305 (1848).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at sea level, no. 927, March 19, 1929 (large tree up to 15 m. high; fruit black when ripe).—Also New Caledonia, Loyalty Islands, Australia (Queensland, New South Wales, North Australia), Norfolk Island and Society Islands.

**Trema Vieillardii** Schlechter in Engler, Bot. Jahrb. xxxix. 96 (1906).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at sea level, no. 717, Feb. 9, 1929 (small tree up to 15 m. high; fruit brown-black when ripe). **E r o m a n g a** : Dillon Bay, common in rain-forest at sea level, no. 398, June 8, 1928 (tree up to 10 m. high;



used for rafters of native houses).—Also New Caledonia and Loyalty Islands.—Vernacular name “Nendog” (under no. 398).

#### MORACEAE

**Pseudomorus Brunoniana** Bureau in Ann. Sci. Nat. sér. 5, XI. 371 (1869).

**A n e i t y u m** : Anelgauhat Bay, common on seashore, no. 926, March 17, 1929 (small tree up to 9 m. high).—Also New Caledonia, Australia (Queensland, New South Wales), Norfolk Island, New Guinea and Hawaii.

#### ARTOCARPACEAE

##### **Ficus L.**

Determined by V. S. SUMMERHAYES

##### Sect. PALAEOMORPHE

**Ficus Decaisneana** Miquel, Fl. Ind. Bat. i. pt. II. 312 (1859).

*Ficus philippinensis* var. *sessilis* Bureau in Ann. Sci. Nat. sér. 5, XIV. 253 (1872).

**B a n k s G r o u p** : Vanua Lava; sea level, rain-forest, common, no. 493, July 18, 1928 (large tree 20 m. high). **E r o m a n g a** : Dillon Bay, sea level, rain-forest, common, no. 265, May 17, 1928 (Fig with straight barrel instead of the usual contorted type; fruit yellow to purple when ripe); alt. 300 m., rain-forest, common, no. 395, June 8, 1928 (small tree 10 m. high).—Vernacular names “Nevelisi” (under no. 395) and “Nervelisen” (under no. 265).

Careful comparison of these specimens with some of those cited by Bureau from New Caledonia and with others from New Guinea and eastern Malaya has convinced me that they all belong to the same species. Although Bureau compares his new variety with *F. subulata* Bl., his description does not mention any hermaphrodite flowers, only male and female ones, and does not specify whether the latter are perfect or galled. The New Caledonian specimens at Kew examined by me bear female receptacles only, but both types occur on the New Hebridean specimens and in the galled receptacles good hermaphrodite flowers were found. In King's monograph the perianth of *F. Decaisneana* is shown as glabrous but this does not seem to be so in any of the specimens I have seen, the lobes being always slightly pubescent or ciliolate and sometimes thickly so. They are, however, always quite free, which sharply distinguishes the species from *F. subulata*, the vegetative characters of which are very similar.

The length of the receptacular stalk is not a constant feature



in *F. Decaisneana* and cannot in my opinion be used for separating a variety from the type. There are specimens at Kew with almost sessile receptacles from almost the whole range of the species although they are commonest in New Caledonia and the New Hebrides.

***Ficus neo-ebudarum*** Summerhayes, sp. nov.

Arbor parva usque 10 m. alta vel frutex scandens; ramuli cortice brunneo primo sparse scabridulo leviter sulcato demum fere laevi obtecti. Folia alterna, breviter petiolata, oblique et inaequaliter ovata, apice breviter acuminata, basi late cuneata vel saepius rotundata, 7–14 cm. longa, 3.5–7 cm. lata, coriacea, omnino glabra, laevia, costa supra vix prominula subtus prominente, nervis lateralibus utrinsecus 6–8 e costa angulo 55–70° exeuntibus prope marginem arcuatim conjunctis supra vix prominulis subtus prominentibus, rete venularum distincto saepe siccitate distinctissimo sed vix prominulo; petiolus crassiusculus, 6–15 mm. longus, mox cortice in laminas parvas tenuissimas decorticante obtectus; stipulae lanceolatae, acuminatae, glabrae. Receptacula axillaria, solitaria vel gemina, alia flores ♂ et ♀ cecidiophoros alia flores ♀ includentia, pedunculata, subsphaeroidea, rubra, 10–12 mm. diametro, sparse scabridula, umbicilo prominulo, ostioli bracteis subprominentibus; pedunculus falsus (stipes receptaculi) gracilis, 4–6 mm. longus, basi bracteis tribus ovatis acutis 1 mm. longis instructus, pedunculo vero interdum brevi. Flores ♂ prope ostiolum, sessiles vel saepissime pedicellati, perianthii segmentis 4 linearibus vel anguste lanceolatis acutis, ovarium et antheram superantibus basi sparse pubescentibus; stamen 1, anthera 1 mm. longa; ovarium cecidiophorum ellipsoideum, stylo infra-apicali brevi; pedicellus pubescens. Flores ♀ cecidiophori sessiles vel usque 3 mm. longe pedicellati, perianthii segmentis 3–4 eis florum ♂ similibus; ovarium ellipsoideum, 1.5 mm. longum, laeve, stylo infra-apicali, stigmatate parvo clavato. Flores ♀ sessiles vel usque 1.5 mm. longe pedicellati, perianthio gamophyllo demum irregulariter fisso quam ovario longiore inferne pubescente; ovarium reniformi-ellipsoideum, 2 mm. longum, rugulosum, stylo infra-apicali vel laterali, stigmatate clavato.

**T a n n a** : Lenakel, alt. 150 m., rain-forest, common, no. 79, March 3, 1928 (small tree 10 m. high). **A n e i t y u m** : west coast, Aname, alt. 150 m., lower ranges and sea-shore, common, no. 995 (coll. *J. P. Wilson*) (type), Sept. 1929 (large vine on forest trees; flowers red, small; fruit red, 12 mm. diameter).—Vernacular name “Nedeug” (under no. 995).

A very close relative of *F. tinctoria* Forst. from which it differs



in the smaller, definitely acuminate leaves and the larger flowers, of which the perianth is only sparsely pubescent at the base. There are specimens of *F. tinctoria* at Kew from Tahiti, Tonga, Samoa and Fiji and these are remarkably constant in the features mentioned above.

Sect. UROSTIGMA

***Ficus acrorrhyncha*** Summerhayes, sp. nov.

Arbor magna, trunco 2-3 m. diametro. Ramuli teretes, glabri, demum cortice pallide brunneo leviter ruguloso obtecti, lenticellis  $\pm$  rotundatis pallidis instructi. Folia petiolata, elliptica, oblongo-elliptica vel ovato-elliptica, apice subito anguste et retrorsum acuminata, basi obtusa, latissime cuneata vel subrotundata, 5-10 cm. longa, 3-6 cm. lata, utrinque glabra, supra praesertim juniora subnitida, costa supra impressa subtus prominente, nervis lateralibus utrinsecus 7-10 rectis vel levissime curvatis basalibus angulo 50-60° ceteris angulo 60° e costa exeuntibus supra prominulis subtus prominentibus nervo submarginali leviter curvato conjunctis, nervis secundariis parallelis crebris, rete venularum subtus distinctissimo; petiolus gracilis, 1-2.5 cm. longus, supra canaliculatus, glaber; stipulae lanceolatae, acuminatae, extra adpresse sericeo-pubescentes. Receptacula axillaria, solitaria, sessilia, ellipsoidea vel subglobosa, circiter 15 mm. longa, 10-12 mm. diametro, siccitate rugosa, glabra, lenticellis rotundatis, ostioli bracteis paulo prominentibus, basi bracteis tribus late reniformibus arcte adpressis instructa. Flores  $\sigma$ ,  $\rho$  et  $\rho$  cecidiophori commixti. Flores  $\sigma$  longe pedicellati, perianthii segmentis 4 liberis obovatis vel obovato-orbicularibus 1 mm. longis glabris stamen singulum arcte includentibus. Flores  $\rho$  cecidiophori pedicellati, perianthii segmentis eis florum  $\sigma$  similibus, ovario sessili ellipsoideo 1.5 mm. longo, stylo 0.5 mm. longo, stigmate breviter clavato. Flores  $\rho$  breviter pedicellati vel saepius sessiles, perianthii segmentis 3-4 ovatis vel lanceolatis 0.7 mm. longis glabris, ovario ovoideo 1.3 mm. longo, stylo 2 mm. longo, stigmate cylindraceo-clavato 0.7 mm. longo.

**A n e i t y u m :** Umage, alt. up to 460 m., rain-forest, common, no. 999 (coll. *J. P. Wilson*), Sept. 1929, (large tree up to 3-4 m. diam.; flowers small, yellow; fruit 15 mm. diam.).—Vernacular name "Nepluth."

This typical member of sect. *Urostigma* is allied to *F. dictyophlebia* F. Muell., *F. retusa* L. and *F. benjamina* L., from all of which it is easily distinguished by the very abrupt and narrow acumen to the leaves. *F. retusa* has shorter and stouter petioles while the fruit possesses a distinct calyculus. In *F. benjamina*



and *F. dictyophlebia* the leaves are more gradually acute with the veins much more prominent on the upper surface and the petioles are shorter, while the fruits are smaller in *F. benjamina*. Those of *F. dictyophlebia* are unknown.

***Ficus austro-caledonica*** Bureau in Ann. Sci. Nat. sér. 5, XIV. 267 (1872).

**A n e i t y u m**: Anelgauhat Bay, alt. 240 m., rain-forest, common, no. 862, March 5, 1929 (small tree 6 m. high; fruit 18 mm. long, 22 mm. diam., purple when ripe); s. w. coast, alt. up to 600 m., rain-forest, common, no. 975 (coll. *J. P. Wilson*), Aug. 1929 (small tree 45 cm. diam.; flowers red; fruit 18 mm. diam., red).—Vernacular name "Natinaia" (under no. 975).

This species strongly resembles *F. granatum* Forst. in leaf characters. It may, however, be distinguished by the slightly different venation of the leaves, the smaller receptacles with an easily detachable skin, the inside of the receptacles and the stalks of the flowers being almost or quite glabrous, and by the perianth of the female and gall flowers splitting irregularly into usually broad portions. In *F. granatum* the female perianth consists of five free, linear, acute segments which usually considerably overtop the ovary or achene.

***Ficus glandifera*** Summerhayes, sp. nov.

Arbor magna, habitu *F. indicæ* L. similis. Ramuli crassi, juniores sparsiuscule pubescentes, demum glabrescentes, cortice brunneo obtecti, cicatricibus foliorum et stipularum delapsorum valde notati. Folia petiolata, late ovata, apice breviter acuminata, acuta, basi obtusissima vel saepius rotundata, 7–14 cm. longa, 4–8 cm. lata, costa supra impressa subtus prominente, nervis lateralibus utrinsecus 20–30 parallelis e costa angulo 70–80° exeuntibus utrinque distinctis supra prominulis nervo submarginali curvato conjunctis, nervis secundariis numerosis subparallelis crebris, rete venularum subtus distincto, coriacea, supra subnitentia, utrinque glabra; petiolus pro rata gracilis, supra leviter canaliculatus, 3–4.5 cm. longus, glaber; stipulae non visae, ut videtur caducae. Receptacula axillaria, singula vel gemina, sessilia vel subsessilia, oblongo-ellipsoidea, circiter 4.5 cm. longa, 2.5 cm. diametro, apice in mammillam 5 mm. diametro producta, ostiolo ipso leviter depresso bracteis haud manifestis, bracteis basalibus in cupulam circiter 1 cm. longam breviter pubescentem receptaculo adnatam connatis, receptacula ergo glandes Querci specierum simulantia; pedunculus usque 4 mm. longus, saepius brevissimus, 4 mm. diametro. Flores ♂, ♀ et ♀ cecidiophori commixti.



Flores ♂ longipedicellati, perianthii segmentis 4 liberis ellipticis vel ovatis valde concavis vix 1 mm. longis glabris stamen singulum arcte includentibus, pedicello bracteis duabus lanceolatis instructo. Flores ♀ cecidiophori pedicellati vel rarius sessiles, perianthii segmentis eis florum ♂ similibus, ovario sessili, stylo brevi, stigmate clavato. Flores ♀ sessiles, ovario ovoideo 1.5 mm. longo, stylo infra-apicali 2.5 mm. longo, stigmate minuto.

**Tanna**: Lenakel, alt. 200 m., rain-forest, common, no. 80, March 3, 1928 (large tree of grand proportions with many roots, "4 m. in diam."; fruit orange-colored). **Anenityum**: Anelgauhat Bay, sea level, rain-forest, common, no. 802, (type), Feb. 21, 1929 (large tree of spreading banyan type, very beautiful; fruit orange-color when ripe, 4.5 cm. long, 2.5 cm. in diam.).

The species, with its remarkable acorn-like fruit, is allied to a group of four species occurring in Queensland, viz: *F. cylindrica* Warb., *F. Baileyana* Domin, *F. crassipes* F. M. Bailey and *F. Watkinsiana* F. M. Bailey. The two last-named differ in having the tip of the fruit drawn out into a point, as well as in the shape of the leaves and other features. *F. cylindrica* is the most closely related to *F. glandifera*, but differs in the possession of larger, relatively narrower oblong leaves with different venation and longer petioles, in the receptacles being definitely stalked and the cupule at the base being relatively smaller. *F. Baileyana* has leaves very similar to those of our species but the receptacles are much smaller, and have a poorly developed bracteal disc at the base and a slender stalk.

**Ficus granatum** Forster, Pl. Esc. 37 (1786).

**Erromanga**: Dillon Bay, alt. 400 m., rain-forest, common, no. 324, May 29, 1928 (large tree 25 m. high; leaves bright green; inside bark used to make cloth as it is glutinous). **Tanna**: Lenakel, alt. 100 m., rain-forest, common, no. 124, March 7, 1928 (tree 20 m. high; fruit 3-4 at end of each branch, pink when ripe, 4 cm. long, 3 cm. diam.). **Anenityum**: Anelgauhat Bay, alt. 30 m., rain-forest, common, no. 732, Feb. 11, 1929 (large tree 18 m. high; fruit red when ripe); alt. 15 to 450 m., common, no. 956 (coll. *J. P. Wilson*), Sept. 1929 (low tree 60 cm. diam.; leaves heavily veined; flowers small, red; fruit brown, edible).—Vernacular names "Nating" (under no. 956) and "Nah-tong" (under no. 324).

A striking species of sect. *Urostigma* which is closely allied to *F. callosa* Willd. and *F. austro-caledonica* Bureau. The differences between it and the latter are mentioned under that species. From *F. callosa*, *F. granatum* is distinguished by its gradually pointed



leaves with the main lateral nerves joining near the margin more simply, the receptacles being red or purple when ripe, and being thickly hairy inside, this also applying to the pedicels of the flowers. In general floral and vegetative characters the species are otherwise very similar.

**Ficus obliqua** Forster, Prodr. Fl. Ins. Austral. 77 (1786).

**E r o m a n g a** : Dillon Bay, sea level, rain-forest, no. 253, May 15, 1928 (common throughout group growing into large tree of many branches and roots; fruit orange-color). **T a n n a** : Lenakel, alt. 200 m., rain-forest soil, common, no. 67, Feb. 24, 1928 (large tree 15–20 m. high, 60 cm. to 1 m. in diameter; fruit brown when ripe). **A n e i t y u m** : Anelgauhat Bay, sea shore, rain-forest, common, no. 781, Feb. 19, 1929 (large tree with spreading head; fruit orange-color when ripe).—Vernacular name “Nar-evirepp” (under no. 253).

**Ficus prolixa** Forster, Prodr. Fl. Ins. Austral. 77 (1786).

*Ficus prolixoides* Warburg in Fedde, Rep. Nov. Spec. i. 79 (1905).—

**Synon. nov.**

**E r o m a n g a** : Dillon Bay, alt. 300 m., rain-forest, common, no. 273, May 17, 1928 (giant Banyan of many trunks and roots; fruit black when ripe). **T a n n a** : Lenakel, alt. 100 m., rain-forest, common, no. 29, Feb. 21, 1928 (large tree of many trunks sending down many roots, up to 25 m. high; fine shade tree); alt. 200 m., rain-forest, common, no. 113, March 6, 1928 (largest Banyan on Tanna). **A n e i t y u m** : Anelgauhat Bay, sea level, rain-forest, common, no. 900, March 15, 1929 (large spreading Banyan, 18 m. high; fruit 10 mm. long, 8 mm. in diam., black when ripe).—Vernacular name “Nepang” (under no. 273) and “Banyan” (under nos. 29 and 900).

I cannot distinguish *F. prolixoides* Warb. from this species; the material at my disposal shows that the differences given by Warburg are not constant.

#### Sect. SYCIDIUM

**Ficus aspera** Forster, Pl. Esc. 36 (1786).

**T a n n a** : Lenakel, alt. 200 m., rain-forest, common, no. 49, Feb. 24, 1928 (small tree 8 m. high; fruit red when ripe); alt. 200 m., rain-forest, common, no. 103, March 5, 1928 (tree 8–12 m. high; fruit yellow, eaten by natives).

**Ficus ciliata** Warburg in Bot. Jahrb. xxv. 615 (1898).

**A n e i t y u m** : Anelgauhat Bay, sea level to 100 m. alt., rain-forest, common, no. 731, Feb. 11, 1929 (large tree 18 m. high;



fruit red when ripe, 14 mm. diam., flattened at the ends); sea level, sea shore, common, no. 788, Feb. 20, 1929 (small tree 6 m. high; fruit red when ripe, 15 mm. diam., flattened at top).

This species, which has been previously recorded only from Samoa, differs from *F. Kajewskii* Summerhayes in the larger receptacles and ciliate perianth lobes.

*Ficus copiosa* Steudel, Nomencl. ed. 2, 635 (1840).

**B a n k s G r o u p** : Vanua Lava, sea level, rain-forest, common, no. 469, July 12, 1928 (small Fig 10 m. high, with fruit growing on trunk). **T a n n a** : Lenakel, alt. 100 m., rich rain-forest soil, common, no. 24, Feb. 21, 1928 (tree 10-12 m. high; fruit red when ripe and growing on side of wood).

This species is also represented at Kew by New Hebridean specimens collected by Miss Cheesman and by Dr. A. Morrison. It is easily recognized by the fact that cork is formed at an early stage at both ends of the petioles but not in the middle. The specimens, in addition to agreeing with the description and the plate in King's monograph (the latter a reproduction of Roxburgh's original drawing), match the specimens collected in Amboina by C. B. Robinson and distributed by Merrill as *Ficus wassa* Roxb. In the writer's opinion these latter specimens are better referred to *F. copiosa* Steud. (*F. polycarpa* Roxb., non Jacq.). It is interesting to note from Roxburgh's own descriptions that the two species are probably allied, since apart from other features they both are said to possess a green gland in the axil of the lowest nerve on each side of the leaf. In his description of *F. polycarpa* Roxburgh likens his species in this respect to *F. laciniata*. There is, however, no *F. laciniata* either in Flora Indica or elsewhere, and a glance at the description and plate (in Wight's Icones) of *F. wassa*, with its leaves sometimes lacinate, suggests that Roxburgh originally named this species *F. laciniata* and afterwards changed the name to *F. wassa* forgetting, however, to make the corresponding alteration in his manuscript under *F. polycarpa*.

*F. copiosa* and *F. wassa* are put into different groups by Roxburgh on account of the receptacles being borne differently, but as *F. copiosa* may have its receptacles either axillary or on the older branches or trunk Roxburgh's segregation can scarcely be maintained on the original grounds alone.

For the moment, however, the descriptions and plates differ too much in other respects to justify uniting the two species. Merrill's identification of Robinson's specimens as *F. wassa* depends to a great extent on the identity of the native name given to the plants described by Rumphius and Roxburgh with that



given to Robinson's plant. Until we know, however, that the names "wassa" and "giho" are applied by the natives to one species of Fig only, we cannot be sure of the identity of the species concerned.

I am, therefore, maintaining the name *F. copiosa* Steud. for the present species, although if the two species were united *F. wassa* would have to be adopted in view of its priority.

**Ficus Kajewskii** Summerhayes, sp. nov.

Arbor parva, 10–15 m. alta. Ramuli teretes, graciles, leviter flexuosi, primo scabridulo-pilosi, demum glabri cortice brunneo vel cinereo-brunneo longitudinaliter ruguloso obtecti. Folia pro genere parva, petiolata, oblique ovata, oblongo-ovata, oblongo-lanceolata vel lanceolata, apice breviter obtuse vel rarius subacute acuminata, basi inaequaliter cuneata usque subcordata, usque 11 cm. longa et 5 cm. lata sed saepius satis minora, chartacea vel rarius subcoriacea, utrinque asperula, glabra, costa supra prominula subtus prominente, nervis lateralibus utrinsecus 4–6 curvatis subtus prominentibus juxta marginem arcuatim conjunctis, nervis tertiariis prominulis, rete venularum quadrato manifesto; petiolus gracilis vel subgracilis, 4–8 mm. longus, primo scabridule pilosus demum glaber, supra canaliculatus; stipulae lanceolatae, acutae, 2–3 mm. longae, extra adpresse pilosae vel fere glabrae. Receptacula axillaria, solitaria vel gemina, pedunculata, globosa vel subglobosa, 5–6 mm. longa, 6–8 mm. diametro, breviter scabrido-pilosula vel fere glabra, ostiolo parvo bracteis vix prominentibus, intus inter flores setis brevibus hyalinis numerosis instructa; pedunculus gracilis, 2–6 mm. longus, scabrido-pilosulus. supra medium vel apice bracteis tribus ovatis obtusis instructus. Flores ♀ sessiles vel rarius usque 1 mm. pedicellati, perianthii segmentis 4–5 lineari-oblongis vel oblongis obtusis vel subacutis superne ± coalitis ovarium includentibus glabris; ovarium sessile, 1–1.5 mm. longum, complanatum, obovoideum vel ellipsoideum, stylo laterali 0.6–1.2 mm. longo, stigmatibus minuto leviter dilatato. Flores ♂ et ♀ cecidiophori non visi.

E f a t e : Undine Bay, alt. 200 m., rain-forest, common, no. 216, April 27, 1928 (tree about 15 m. high; fruit red when ripe); Mt. McDonald, alt. 500 m., rain-forest, common, no. 233, April 28, 1928 (tree 15 m. high). E r o m a n g a : Dillon Bay, centre of island, alt. 400 m., rain-forest, common, no. 343, June 1, 1928 (small fig, 10 m. high, with very small straight trunk). A n e i - t y u m : Anelgauhat Bay, alt. 34 m., rain-forest, common, no. 737 (type), Feb. 12, 1929 (small tree 10 m. high; leaves dark



green, midrib light yellow; fruit purple black when ripe).—Vernacular name “Neme-sue” (under no. 343).

The nearest relative of this species seems to be *F. Barclayana* Summerhayes, comb. nov. (*Covellia Barclayana* Miq., *Ficus Barclayi* Seem.), a native of Fiji. Although that species is placed by Miquel in sect. *Covellia* and the female flowers are drawn as possessing no perianth, *F. Barclayana* seems to me to belong more properly to sect. *Sycidium*. Seemann's dissections from specimens which seem identical with the type show the female flowers as possessors of typical *Sycidium* perianths. *F. Kajewskii* differs from the Fiji plant in its less hairy receptacles, which are however furnished with colorless setae inside, in the perianth being quite glabrous and in minor characters of the leaves. Both species have the rough leaves and the small rough axillary receptacles characteristic of sect. *Sycidium*.

***Ficus trichoneura* Summerhayes, sp. nov.**

Arbor parva vel mediocris usque 15 m. alta; ramuli hornotini ± adpresse hirsuti, annotini glabrescentes, cortice leviter longitudinaliter sulcato castaneo-brunneo obtecti. Folia alterna, longiuscule petiolata, rhombeo- vel oblongo-elliptica vel ovata, superne late acutata apice ipso emarginato-obtusa, basi rotundata vel subrotundata, 5–14 cm. longa, 2–6 cm. lata, chartacea, supra glabra, laevia, siccitate griseo-viridia, subtus costa et nervis primariis praesertim infimis adpresse hirsutis demum glabrescentibus, ceterum glabra, pallide viridia, saepius albido-punctulata, costa et nervis supra prominulis subtus prominentibus, nervis primariis utrinsecus 8–10 infimis angulo acuto ceteris angulo circiter 60° e costa exeuntibus prope marginem arcuato-conjunctis, rete venularum crebro distincto; petiolus gracilis, 1–4 cm. longus, supra leviter canaliculatus, primo dense adpresse hirsutus, demum glabrescens, cortice ei caulis simili obtectus; stipulae lineari-lanceolatae, acutissimae, glabrae, castaneo-brunneae, cito deciduae. Receptacula axillaria, solitaria vel saepius gemina, alia flores ♂ et ♀ cecidiophoros, alia flores ♀ includentia, pedunculata, sphaeroidea vel subsphaeroidea, viridia, 6–7 mm. longa, 7–9 mm. diametro, glabra, umbilico prominente, ostiolo depresso, bracteis vix obviis, intus setis paucis longiusculis inter flores instructa; pedunculus falsus (stipes receptaculi) gracilis, 1–4 mm. longus, puberulus, basi bracteis tribus parvis ovatis obtusis 1 mm. longis instructus, pedunculo vero simili 0.5–5 mm. longo, totus pedunculus 4–8 mm. longus. Flores ♂ prope ostiolum, sessiles, perianthii segmentis 3–4 liberis lineari-lanceolatis antheram includentibus brunneis glabris; stamen 1, filamentum antherae aequilongo. Flores



♀ cecidiophori sessiles, brunnei, perianthio irregulariter fisso segmentis saepius 2-3 lanceolatis ovario aequilongis glabris; ovarium compresse ellipsoideum vel ovoideum, circiter 1 mm. longum, stylo laterali brevi, stigmatе breviter clavato. Flores ♀ sessiles, brunnei, perianthii segmentis tribus linearibus 1.25-.5 mm. longis; ovarium compresse reniforme, 1.5 mm. longum, rugulosum, stylo laterali, stigmatе clavato ovarium paulo superante, bractea basali spathulato-lineari.

**B a n k s G r o u p** : Vanua Lava, sea level, rain-forest, common, no. 417, July 6, 1928 (medium sized tree up to 15 m. high), and no. 426 (type) July 6, 1928 (small tree up to 6 m. high). **E r o - m a n g a** : Dillon Bay, sea level, rain-forest, common, no. 264, May 17, 1928 (smaller type of Fig averaging 10 m. high). **T a n n a** : Lenakel, alt. 200 m., rain-forest, common, no. 89, March 5, 1928 (large tree 20 m. high); alt. 100 m., rain-forest soil, common, no. 23, Feb. 21, 1928 (tree 12-15 m. high; leaves dark green). **A n e i t y u m** : Anelgauhat Bay, sea level, rain-forest, common, no. 711, Feb. 9, 1929 (Fig tree growing 20 m. high; fruit green when ripe, 6 mm. in diam.).—Vernacular name "Bongnute" (under no. 264).

This species is apparently one of the commonest Figs in the New Hebrides, as in addition to the above gatherings there are at Kew several more from the southern islands of the group. According to Miss L. E. Cheesman the species is also found in Malekula, which is quite probable, although I have not seen a specimen from that island. The species has been collected up to 300 m. altitude. There is also a specimen at Kew collected by Kajewski in the Santa Cruz Islands.

*F. trichoneura* is most closely allied to *F. chrysolæna* K. Schum., a native of New Guinea and the Solomon Islands, which differs in having the veins more hairy below while the lamina is also partly hairy, the receptacles larger and shortly pubescent, and the bracts immediately at the base of the receptacles so that there is no stipe. It is also interesting to note that our species very strongly resembles *F. adenosperma* Miq. which, however, by virtue of its hermaphrodite flowers is placed in sect. Palaeomorphe. Since both *F. trichoneura* and *F. chrysolæna* vary considerably from the normal type of sect. Sycidium it is possible that they are really types of sect. Palaeomorphe in which the hermaphrodite flowers have been lost. In this connection it is worthy of notice that in *F. adenosperma* wholly male flowers are present as well as hermaphrodite and gall flowers, the hermaphrodite flowers containing a properly developed gall ovary and an abortive stamen.



## Sect. COVELLIA

**Ficus verrucosa** Vahl, Enum. II. 192 (1806).

*Ficus septica* Forster, Prodr. Fl. Ins. Austral. 76 (1786).—Non Burm. f.

*Ficus casearia* F. v. Mueller apud Bentham Fl. Austral. VI. 177 (1873).—  
Summerhayes in Jour. Arnold Arbor. x. 148 (1929).

**E r o m a n g a** : Dillon Bay, alt. 300 m., rain-forest, common, no. 271, May 17, 1928 (Fig with single stem up to 15 m. high; leaves dark glossy green; fruit yellow when ripe). **A n e i t y u m** : Anelgauhat Bay, sea level, rain-forest, common, no. 793, Feb. 20, 1929 (large tree 12 m. high; fruit 12 mm. long, flattened at both sides, cream-color when ripe).—Vernacular name "Ubariherhon" (under no. 271).

This species is widely spread from the New Hebrides to New Guinea and Australia. There are specimens at Kew from the Admiralty and Solomon Islands. It is closely allied to *F. leucantantoma* Poir.

## Sect. EUSYCE

**Ficus Moseleyana** King in Ann. Bot. Gard. Calcutta, I. 144, t. 181 (1888).

**B a n k s G r o u p** : Vanua Lava, sea level, sea shore, common, no. 433, July 7, 1928 (medium tree up to 15 m. high).

Previously known only from eastern Malaya.

**Artocarpus incisa** Linnaeus f., Suppl. 411 (1781).

**E r o m a n g a** : Dillon Bay, common in rain-forest at sea level, no. 394, June 9, 1928 (large tree up to 20 m. high; the most useful tree of the islands as it supplies large quantities of fruit and the wood is used for canoes).—Also New Caledonia, Samoa, Society, Ellice, Gilbert, Marshall, Caroline, Mariana, Santa Cruz, Solomon, Bismarck and Admiralty Islands, New Guinea and Hawaii.—Vernacular name "Ne-marl."

## URTICACEAE

**Laportea crenulata** (Roxb.) Gaudichaud in Arch. Mus. Nat. Paris, IX. 133, t. 2c, fig. 5 (1856).

**B a n k s G r o u p** : Vanua Lava, common in rain-forest at sea level, no. 421, July 6, 1928 (large tree up to 15 m. high, leaves glossy above; bad as a stinging tree).—Also Bismarck Islands, New Guinea and Malaysia.

It seems that the plant found on Efate by Levat should be referred to this species and not to *L. photiniphylla*.

**Elatostema macrophyllum** Brongniart in Duperrey, Voy. Coquille 207, t. 45 (1829).



*Aneityum*: Anelgauhat Bay, common in rain-forest up to 450 m., no. 968 (coll. *J. P. Wilson*), Sept. 1929 (small shrub about 1.30 m. high; flowers small, white; fruit at base of flower, about 0.4 cm. in diam.; stem pithy).—Vernacular name “Ilbuvin.”

*Procris pedunculata* Weddell in De Candolle, Prodr. xvi. pt. i. 191 (1869).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 300 m., no. 852, March 2, 1929 (plant up to 1 m. high; fruit with red pulp and white seeds).—Already found on Efate; also New Caledonia, Fiji, Samoa, Society, Marquesas, Marshall, Mariana, Solomon and Bismarck Islands and New Guinea.

*Boehmeria anisoneura* Guillaumin, sp. nov.

Arbor parva, trunco 15 cm. diam., ramis rufo-velutinis, foliis oppositis inaequalibus, uno valde asymmetrico ovato (usque ad 25 cm.  $\times$  10 cm.), petiolo 6–8 cm. longo, altero fere symmetrico ovato (usque ad 12 cm.  $\times$  8 cm.), petiolo circa 0.5 cm. longo, membranaeis margine a basi ad apicem dense serratis apice attenuatis vel longe acuminatis basi oblique rotundatis leviterque cordatis, nervis principalibus 3, uno in parte angustiore fere apicem attingenti, altero in parte latiore ad tertiam supremam partem vergente, secundariis a venarum exteriorum exteriori parte regulariter parallelis numerosis, a veno centrali ad partem latiore arcuatis paucis, nervis valde reticulatis, pagina superiore hispido-scabra, inferiore velutina, petiolo velutino, stipulis intrapetiole lanceolatis 2–3 cm. longis tarde deciduis, extra praecipue secundum lineam longitudinaliter centram argenteo-hispidis. Flores albi, in axillis glomerati, glomerulis circa 1 cm. diam. multifloris, bracteis glabris, ♀ perigonio ore breviter 2–3-dentato extra hirsuto ellipsoideo, ovario styloque glabris.

*Aneityum*: west coast, common in rain-forest up to 600 m., no. 1005 (coll. *J. P. Wilson*), Sept. 1929 (small tree to 15 cm. in diam.; flowers very small, white; fruit very small, at base of petiole).—Vernacular name “Nowau.”

A very remarkable species among those with axillary glomerules and opposite leaves. It seems nearest to *B. monticola* Bl. of Sumatra.

*Boehmeria platyphylla* (Buch-Ham.) D. Don, Prodr. Fl. Nep. 60 (1825).

*Aneityum*: west coast, common in rain-forest up to 450 m., no. 961 (coll. *J. P. Wilson*), Sept. 1929 (small tree to 15 cm. in diam.; flowers small; fruit very small).—Already found on Espiritu Santo; also New Caledonia, Australia (Queensland), Fiji, Samoa and Society Islands, New Guinea, Malaysia.—Vernacular name “Nahwai.”



**Cypholophus macrocephalus** Weddell in Ann. Sci. Nat. sér. 4, I. 198 (1854).

**Aneityum**: Anelgauhat Bay, common in rain-forest at 300 m., no. 766, Feb. 14, 1929 (shrub up to 3.60 m. high; fruit light green).—Also Fiji, Samoa and Society Islands, Moluccas and Malaysia.

**Pipturus albidus** (Hook. & Arn.) A. Gray apud Mann in Proc. Am. Acad. Sci. VII. 201 (1867).

**Tanna**: Mt. Tokosh Meru, common in rain-forest at 1000 m., no. 148, March 15, 1928 (small plant 1 m. high on crest of the mountain).—Also New Caledonia, Society Islands, New Guinea and Hawaii.

**Pipturus argenteus** Weddell in DeCandolle, Prodr. XVI. pt. I, 235<sup>19</sup> (1869).

**Aneityum**: Anelgauhat Bay, common in rain-forest at sea level, no. 712, Feb. 9, 1929 (small tree up to 12 m. high; leaves dark green above, silvery beneath, with light pink petiole; fruit light green). **Tanna**: Lenakel, common in heavy rain-forest soil at sea level, no. 10, Feb. 20, 1928 (small tree up to 6 m. high; leaves dark green above, silvery underneath).—Already found on Aneityum, Erronan, Tanna and Efate; also Australia (Queensland, New South Wales), Fiji, Tonga, Society, Marquesas, Mariana and Bismarck Islands, New Guinea, Moluccas and Malaysia.

**Pipturus repandus** Weddell in Arch. Mus. Paris, VIII. 448 (1855).

**Tanna**: Mt. Tokosh Meru, common in rain-forest at 200 m., no. 144, March 14, 1928 (tree up to 20 m. high; natives use root for cleaning hair).—Also New Caledonia, Loyalty Islands, Malaysia and Hawaii.

**Leucosyke capitellata** Weddell in De Candolle, Prodr. XVI. pt. I, 235<sup>27</sup> (1869).

**Aneityum**: west coast, common in lower forest ranges up to 180 m., no. 963 (coll. *J. P. Wilson*), Sept. 1929 (small tree, trunk up to 0.3 m. diam., flowers yellow; fruit round, brown); Anelgauhat Bay, common in rain-forest at 60 m., no. 759, Feb. 13, 1929 (small tree up to 9 m. high; leaves silvery underneath, with brown-green veins). **Efate**: Undine Bay, common in rain-forest at 300 m., no. 227, April 27, 1928 (tree up to 10 m. high; leaves green above, silvery underneath).—Also Solomon Islands (?), Bismarck Islands, New Guinea, Moluccas and Malaysia.—Vernacular name “Niicki-fig” (under no. 963).



## CASUARINACEAE

*Casuarina equisetifolia* Linnaeus, *Amoen. Acad.* iv. 143 (1759).—  
Forster, *Char. Gen.* 103, fig. 52 (1776).

*A n e i t y u m* : Anelgauhat Bay, common on seashore, no. 697, Feb. 4, 1929 (tall tree up to 20 m. high, common throughout the New Hebrides). *B a n k s G r o u p* : Vanua Lava, common on seashore, no. 451, July 9, 1928 (tree up to 20 m. high growing on the average much larger than the Queensland coastal "She-oak").—Already found on Aniwa; also New Caledonia, Australia (Queensland, North Australia), Fiji, Tonga, Cook, Society, Marquesas, Mariana, Solomon, Bismarck and Admiralty Islands, New Guinea, Malaysia.

## ORCHIDACEAE

Determined by OAKES AMES

*Corymborchis veratrifolia* (Reinw.) Blume, *Fl. Jav. nov. ser.* i. 105, t. 43, fig. 1 (1858).

*T a n n a* : no. 146 (see p. 127).

*Malaxis neo-ebudica* Ames in *Jour. Arnold Arb.* XIII. 128 (1932).

*T a n n a* : no. 137 (see p. 128).

*Malaxis xanthochila* (Schltr.) Ames & Schweinfurth in Ames, *Orch.* vi. 73 (1920).

*A n e i t y u m* : no. 837 (see p. 128).

*Liparis condylobulbon* Reichenbach f. in *Hamb. Gartenz.* XVIII. 34 (1862).

*E r o m a n g a* and *B a n k s G r o u p* : nos. 321 and 455 (see p. 129).

*Dendrobium* (§ *Aporum*) sp.

*E f a t e* : no. 190 (see p. 131).

*Eria Kajewskii* Ames in *Jour. Arnold Arb.* XIII. 135 (1932).

*A n e i t y u m* : no. 820 (see p. 135).

*Ceratostylis subulata* Blume, *Bijdr.* 306 (1825).

*E f a t e* : no. 234 (see p. 138).

*Earina Brousmichei* Kränzlin in *Lecomte Not. Syst.* iv. 136 (1928).

*A n e i t y u m* : no. 844 (see p. 138).

*Appendicula reflexa* Blume, *Bijdr.* 301 (1825).

*A n e i t y u m* and *E r o m a n g a* : nos. 915 and 326 (see p. 138).

*Spathoglottis Petri* Reichenbach f. in *Gard. Chron.* n. ser. VIII. 392 (1877).

*E r o m a n g a* : no. 306 (see p. 140).



**Saccolabium Kajewskii** Ames in Jour. Arnold Arb. XIII. 141 (1932).  
E f a t e and B a n k s G r o u p : nos. 205 and 448 (see p. 141).

## ZINGIBERACEAE

**Zingiber zerumbet** Roscoe apud Smith, Exot. Bot. II. 105, t. 112 (1805); in Trans. Linn. Soc. VIII. 348 (1807).

A n e i t y u m : Anelgauhat Bay, common in rain-forest at 180 m., no. 850, March 2, 1929 (plant up to 1.5 m. high; flowers white).—Also New Caledonia, Australia (Queensland), Fiji, Samoa, Society, Marquesas, Mariana and Bismarck Islands, New Guinea, Malaysia and Hawaii.

**Alpinia Blumei** K. Schumann in Bot. Jahrb. XXVII. 282 (1900) ?

B a n k s G r o u p : Vanua Lava, common in rain-forest at sea level, no. 416, July 5, 1928 (tall plant about 3 m. high, along water courses; flowers bright pink).

The characters agree well with the description of this Javanese species except that the inflorescence attains 14 cm., but the flowers are lacking and it is impossible to know the shape of the bractlet. In any case the plant belongs in the genus *Guillainia*.

## MARANTACEAE

**Donax arundastrum** Loureiro, Fl. Cochin. 11. (1790).

B a n k s G r o u p : Vanua Lava, common in swampy rain-forest at sea level, no. 420, July 6, 1928 (plant up to 2 m. high with branches radiating from one node; flowers white to cream-colored; fruit 1.5 cm. in diam.).—Also in the Philippines and Asia.

## AMARYLLIDACEAE

**Crinum pedunculatum** R. Brown, Prodr. Fl. Nov. Holl. 297 (1810).

A n e i t y u m : Anelgauhat Bay, common along sea shore, no. 805, Feb. 21, 1929 (large plant up to 1.5 m. high, growing close to the beaches; leaves numerous, long; flowers white).—Also New Caledonia, Australia (Queensland, New South Wales, South Australia), Tonga and Cook Islands, New Guinea, Moluccas and Malaysia?

## TACCACEAE

**Tacca pinnatifida** Forster, Gen. Char. 70, t. 35 (1776).

E r o m a n g a : Dillon Bay, common in rain-forest at 400 m., no. 345, June 1, 1928 (plant up to 80 cm. high growing wild on all the islands; arrowroot is manufactured from the bulbs and has been a source of revenue for the mission stations).—Also New Caledonia, Loyalty Islands, Australia (Queensland, South Australia),



Fiji, Tonga, Samoa, Society, Marquesas, Ellice, Marshall, Caroline, Mariana, Solomon and Bismarck Islands, New Guinea, Malaysia and Hawaii.—Vernacular name "Yovoli."

#### DIOSCOREACEAE

*Dioscorea bulbifera* Linnaeus, Sp. Pl. 1033 (1753).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at sea level, no. 896, March 11, 1929 (wild yam growing over the small trees; not edible).—Already found on Efate; also New Caledonia, Loyalty Islands, Australia (Queensland), Fiji, Tonga, Samoa, Society, Marquesas, Caroline and Mariana Islands, New Guinea, Moluccas, Malaysia and Hawaii.

*Dioscorea nummularia* Lamarck, Encyc. Méth. III. 231 (1789). ?

**E r o m a n g a** : Dillon Bay, common in native gardens, rain-forest at sea level, no. 250, May 15, 1928 (climbing on sticks placed by natives who take great care of its cultivation; this red yam is the chief food of natives).—Also Australia (Prince of Wales Island), Fiji, Society, Caroline and Bismarck Islands, New Guinea, Moluccas, Philippines.—Vernacular name "Loop."

It is strange that the collector indicates *D. nummularia* as the edible species and *D. bulbifera* as the wild species, and one may ask whether the labels have not been interchanged.

#### LILIACEAE

*Smilax vitiensis* A. De Candolle in De Candolle, Monogr. Phaner. I. 204 (1878).

**B a n k s G r o u p** : Vanua Lava, common in rain-forest at 500 m., no. 483, July 16, 1928 (vine growing over rain-forest trees; fruit purple to black when ripe).—Also Fiji and Bismarck Islands.

*Smilax* sp.

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 210 m., no. 819, Feb. 28, 1929 (vine growing over rain-forest trees; fruit 1.3 cm. long, 1.5 cm. in diam., black when ripe).

*Geitonoplesium cymosum* A. Cunningham in Bot. Mag. t. 3131 (1832).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at sea level, no. 832, Feb. 28, 1929 (vine growing over rain-forest trees; fruit 0.5 cm. long, 0.8 cm. in diam., black when ripe).—Also New Caledonia, Loyalty Islands, Australia (Queensland, New South Wales, Victoria), Norfolk Island, Fiji and Bismarck Islands and New Guinea.



*Dianella ensifolia* [A. P. DeCandolle in] Redouté, Lil. i. 1, t. 1 (1802).

*Eromanga*: Dillon Bay, common in poor red soil, open country at 400 m., no. 346, June 1, 1928 (plant about 1 m. high; flowers pale blue).—Also New Caledonia, Australia (Queensland, North Australia), Fiji, Tonga, Society, Caroline and Mariana Islands, New Guinea, Malaysia and Hawaii.—Vernacular name "Did-and-Did."

*Dracaena* sp.

*Anenityum*: Anelgauhat Bay, common in rain-forest at sea level, no. 881, March 6, 1929 (up to 6 m. high; fruit 2.5 cm. long, 3 cm. in diam.; black when ripe; leaves used for making grass skirts).

The leaves of the plant resemble exactly those of *D. aurantiaca* Wall. of the Philippines and Asia.

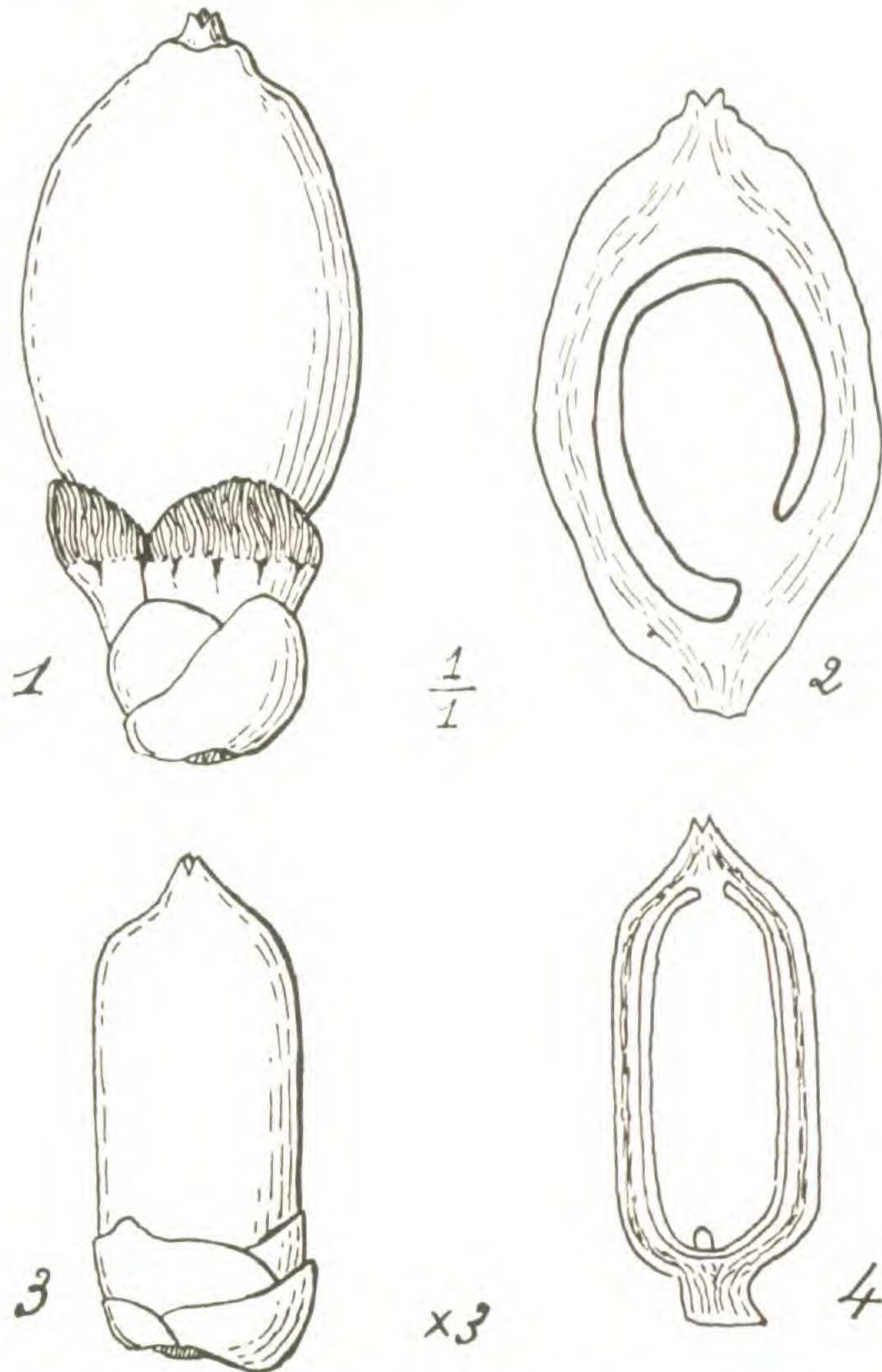


FIG. 1.—CHAMBEYRENIA sp.: 1. Fruit. 2. Longitudinal section of fruit. CYPHOPHOENIX sp.: 3. Fruit. 4. Longitudinal section of fruit.



## PALMAE

*Chambeyronia* sp. aff. *C. macrocarpa* Vieill.

Fig. 1: 1, 2

Banks Group: Vanua Lava, rare in rain-forest at sea level, no. 428, July 6, 1928 (Palm up to 15 m. high; fruit edible).

*Cyphophoenix* sp. nov. ?

Fig. 1: 3, 4

Banks Group: Vanua Lava, common in rain-forest at 100 m., no. 465, July 11, 1928 (tall palm 15 m. high; fronds about 2 m. long).

The fruit resembles completely that of *C. elegans* H. Wendl. of New Caledonia, the only species of the genus, but differs in its smaller size (1.8 cm.  $\times$  0.4 cm.), its turbinate shape and its smooth pericarp.

*Kajewskia aneityensis* Guillaumin, gen. nov. et sp. nov. Fig. 2

Palma 20 m. alta, foliis ultra 4 m. longis pinnatisectis, segmentis lanceolatis (circa 60 cm.  $\times$  8 cm.) acuminatis in axilla subtusque ad costae basin brunneo-filamentoso-squamatis. Spadix valde

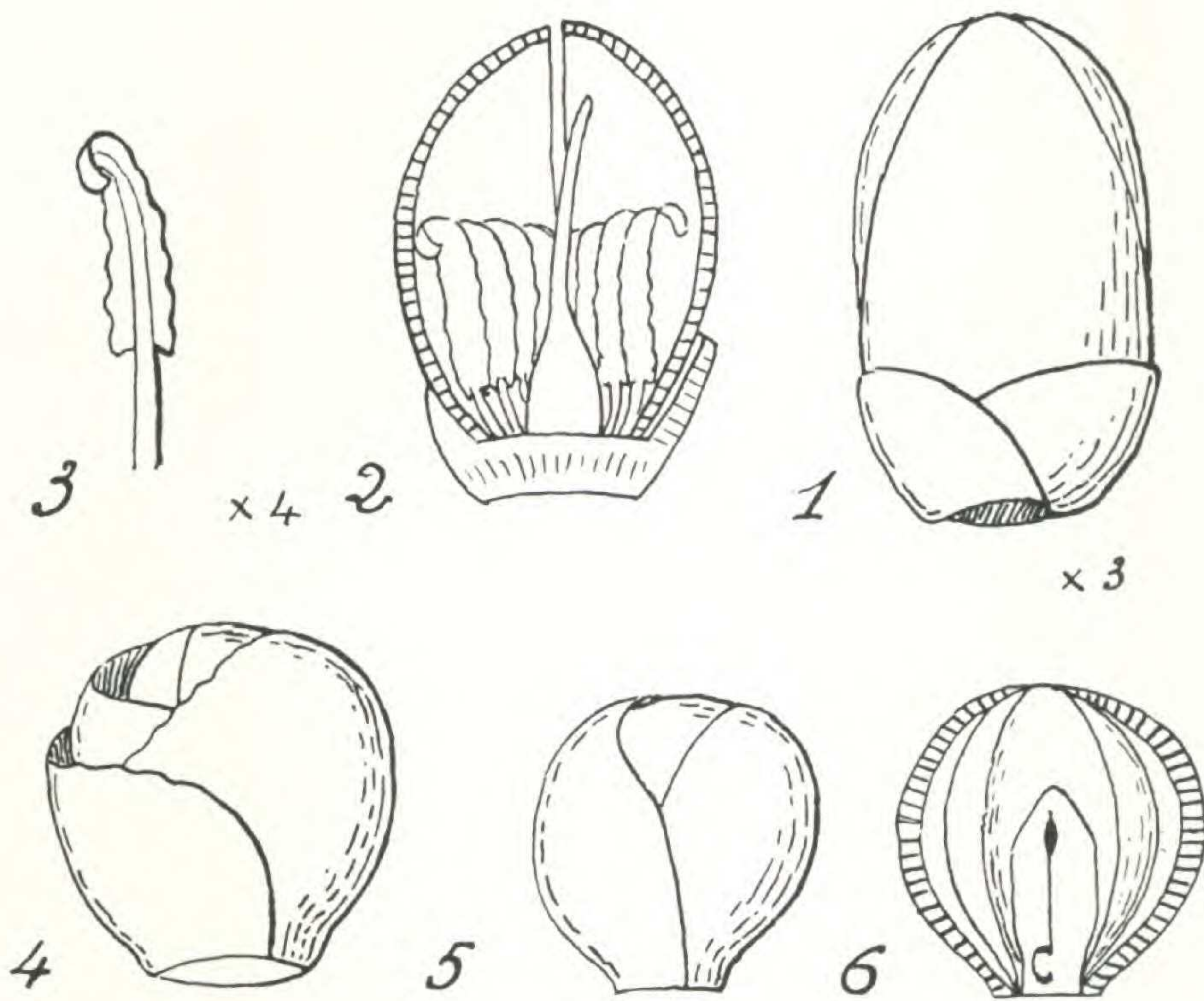


FIG. 2.—KAJEWSKIA ANEITYENSIS Guillaumin: 1. Staminate flower. 2. Longitudinal section of staminate flower. 3. Stamen. 4. Pistillate flower. 5. Corolla. 6. Longitudinal section of pistillate flower.

ramosus, ramis angulosis brunneo-squamatis, floriferis circa 15 cm. longis valde sinuosis, floribus  $\sigma^7$  et  $\text{f}$  intermixtis singulis vel 2-nis uno  $\sigma^7$  altero  $\text{f}$ ,  $\sigma^7$  ellipsoideis (12 mm.  $\times$  7 mm.) vertice rotunda-



tis symmetricis, sepalis rotundatis ad 4 mm. longis imbricatis, petalis ellipticis apicem versus attenuatis crassis valvatis, staminibus  $\infty$ , antheris linearibus apice recurvis undulatis 4 mm. longis, loculis parallelis basi leviter divaricatis, filamentis duplo brevioribus connectivo nigro continuis, pistillodio basin versus incrassato in collum tenuem attenuato stamina superante, ♀ globosis (8 mm. diam.), sepalis laxis valde imbricatis ad 8 mm. longis ovato-rotundatis, petalis inclusis valde appresse cucullato intricatis 7 mm. longis ovato-rotundatis, staminodiis 0, ovario oblonge turbinato tertia suprema parte conice stigmatoso, ovulo 1 parietali ad loculi basin inserto.

**A n e i t y u m** : Anelgauhat Bay, not common in rain-forest at sea level, no. 784, Feb. 19, 1929 (large palm to 18 m. high; fronds up to 3.5 m. long; stamens white, anthers cream-colored).

Near *Actinokentia*, a genus represented only by *A. divaricata* Dammer (= *A. Schlechteri* Dammer) of New Caledonia, but differs in its much larger flowers resembling those of *Arenga*, not regularly arranged in three's (2 lateral and 1 central flower) and in the absence of the staminodes in the pistillate flower.

#### PANDANACEAE

Determined by U. MARTELLI

**Pandanus Cominsii** Hemsley in Hooker's Icon. Pl. xxvii. t. 2654 (1900).

**B a n k s G r o u p** : Vanua Lava, common in rain-forest at 100 m., no. 471, July 12, 1928 (up to 4 m. high, much smaller than its coastal relative; fruit red when ripe, on a cylindrical spike).—Also found in Solomon Islands.

**Freycinetia tannaensis** Martelli in Jour. Arnold Arb. xii. 269 (1930). Plate 43

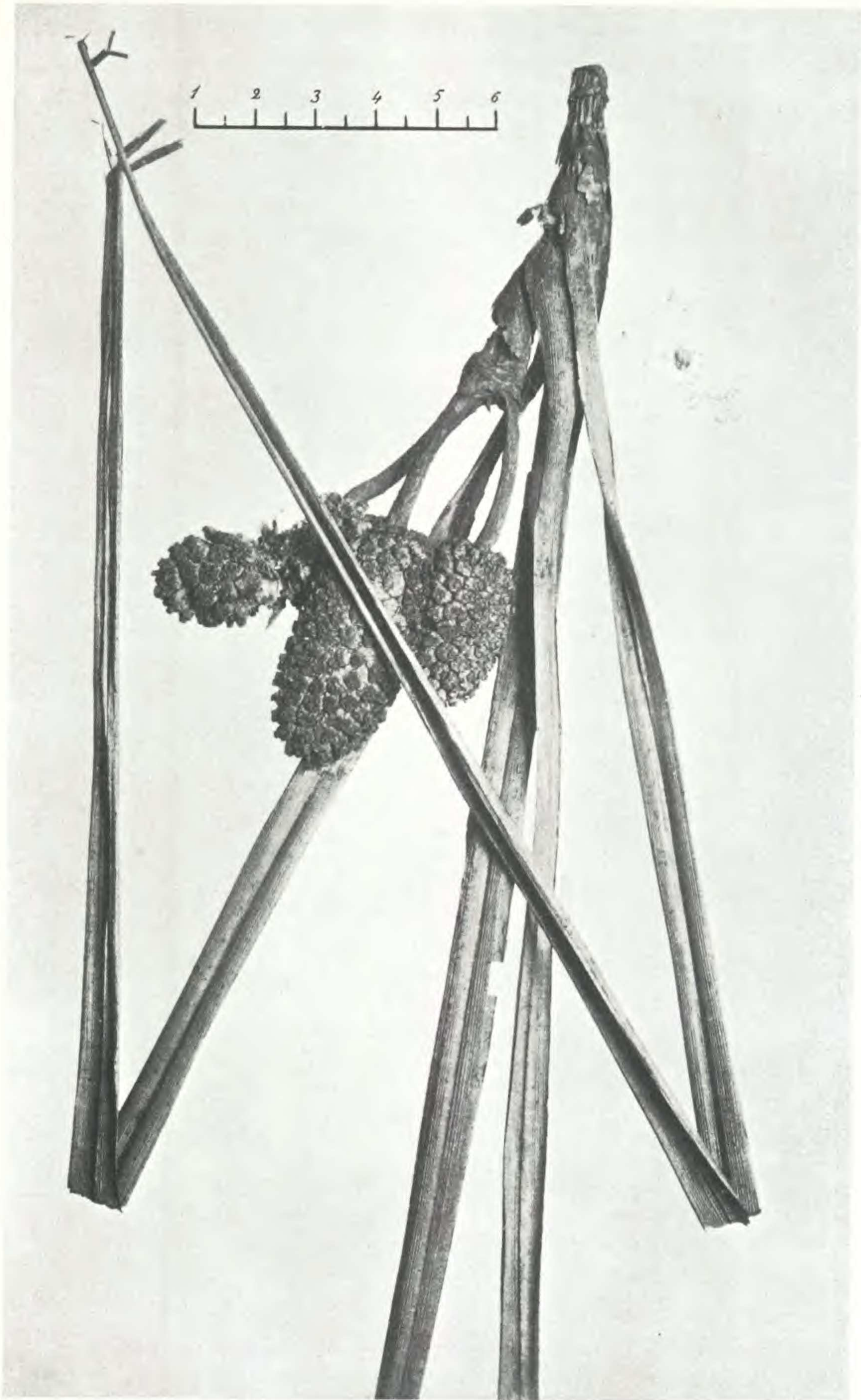
**T a n n a** : on Mt. Tokosh Meru, very common in rain-forest, at 800 m., no. 163, March 15, 1928 (climbing up the trunks of trees).

#### ARACEAE

**Epipremnum pinnatum** (L.) Engler in Engler, Pflanzenr. iv. 23<sup>B</sup>, p. 60 (Arac.) (1908).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 210 m., no. 830, Feb. 28, 1929 (climbing up the trunks of trees: fruit 10–15 cm., long).—Already found on Tanna; also in New Caledonia, Loyalty Islands, Australia (Queensland), Fiji, Tonga, Marshall and Bismarck Islands, New Guinea, Moluccas and Malaysia.





FREYCINETIA TANNAENSIS Martelli  
Photograph of type in the Herbarium Martelli



CYPERACEAE<sup>1</sup>

*Pycreus polystachyus* Beauvais, Fl. Owar. II. 48, t. 86 (1807).

*E r o m a n g a* : Dillon Bay, common in cleared rain-forest at sea level, no. 277, May 19, 1928 (small sedge 30–40 cm. high).—Also New Caledonia, Australia (Queensland, New South Wales), Samoa, Cook and Bismarck Islands, New Guinea, Malaysia.—Vernacular name “Overi-car.”

*Kyllingia monocephala* Rottboell, Descr. Ic. 13, t. 4, fig. 4 (1773).

*E r o m a n g a* : Dillon Bay, commonly growing in cleared rain-forest at sea level, no. 276, May 19, 1928 (sedge 25–40 cm. high; macerated with leaves of “Denyung” (Cane grass) in cold water and drunk for spleen trouble; macerated with leaves of “Naivoss,” “Tomirirri” and “Nesivinesip” (shrub) in cold water and drunk by women in state of pregnancy for good health).—Already found on Aneityum, waste place (*MacGillivray*, no. 53, December 1858 [unpublished locality]) and on Efate; also New Caledonia, Australia (Queensland, New South Wales), Norfolk Island, Fiji, Tonga, Samoa, Cook, Society, Caroline, Mariana, Santa Cruz, Solomon and Bismarck Islands, New Guinea and Malaysia.—Vernacular name “Polell.”

*Fimbristylis communis* Kunth, Enum. Pl. II. 234 (1837).

*E r o m a n g a* : Dillon Bay, common in open grass country at 300 m., no. 318, May 28, 1928 (sedge about 50–75 cm. high; plaited together by women for grass dresses).—Already found on Aneityum, swamp (*MacGillivray*, no. 24, Oct. 1858 [unpublished locality]).—Also New Caledonia, Australia (Queensland, New South Wales, North Australia), Tonga, Cook, Society, Mariana and Bismarck Islands, New Guinea and Malaysia.—Vernacular name “Farll.”

*Lepidosperma* sp. cf. *L. elatius* Labill. of Australia (Victoria, Tasmania).

*T a n n a* : Mt. Tokosh Meru, common in rain-forest at 1000 m., no. 155, March 15, 1928 (sedge on very top of the mountains).

*Cladium Milnei* C. B. Clarke in Kew Bull. Add. ser. 8, p. 46 (1908).

*E r o m a n g a* : Dillon Bay, common in poor red soil, bracken country, no. 327, May 29, 1928 (about 1 m. high; seed bright brown).—Already found on Aneityum.<sup>2</sup>—Vernacular name “Did-and-did.”

<sup>1</sup> To the plants cited in my “Liste des plantes connues [des Nouvelles Hébrides] (in Bull. Soc. Bot. France LXXIV. 709, 1927) the following should be added: *Fimbristylis monostachya* Hassk., Aneityum, open place (*MacGillivray*, no. 44), Feb. 1859; *Scirpus mucronatus* L., Eromanga, stream (*MacGillivray*, n. 7), Sept. 1879; *Rynchospora aurea* Vahl, Aneityum, swamps (*MacGillivray*, no. 28), Oct. 1878 (inedited).

<sup>2</sup> Omitted from my “Liste des plantes connues [des Nouvelles Hébrides]. (Bull. Soc. Bot. France LXXIV. 709. 1927).



## GRAMINEAE

Determined by A. S. HITCHCOCK

**Isachne distichophylla** Munro in Jour. Bot. VII. 178 (1869), nom. nud.; Hillebrand, Fl. Hawaiian Isl. 504 (1888).

**T a n n a** : Mt. Tokosh Meru, common in rain-forest at 1000 m., no. 147, March 15, 1928 (small grass right on the top of Tokosh Meru).—Also in Hawaii.

**Brachiaria subquadriparia** (Trin.) Hitchcock in Lingnan Sci. Jour. VII. 214 (1931).

**E r o m a n g a** : Dillon Bay, common in cleared rain-forest at sea level, no. 278, May 19, 1928 (short grass 30–40 cm. high; one of the commonest grasses in the islands, growing among the cocoanuts after the scrub has been felled; the natives say it is introduced).—Also Australia (Queensland, South Australia), Mariana and Bismarck Islands.—Vernacular name “Noth-lor-si.”

**Brachiaria ambigua** (Trin.) A. Camus in Lecomte, Fl. Gén. Indo-Chine, VII. 433 (1922).

**E r o m a n g a** : Dillon Bay, common in clearings in rain forest at sea level, no. 279, May 19, 1928 (grass about 60 cm. high; introduced).—Already found in Aneityum; also New Caledonia, Fiji, Samoa, Cook, Mariana and Solomon Islands.

**Syntherisma microbachne** (Presl) Hitchcock in Mem. Bishop Mus. Honolulu, VIII. 177 (1922).

**E r o m a n g a** : Dillon Bay, common in rain-forest clearings at sea level, no. 280, May 19, 1928 (grass 0.60–1 m. high; cattle are not very fond of it).—Also in South America.—Vernacular name “Nof-le-fule.”

**Oplismenus compositus** (L.) Beauvois, Essai Agrost. 54 (1812).

**E r o m a n g a** : Dillon Bay, common in rain-forest clearing at sea level, no. 281, May 19, 1928 (grass about 80 cm. high in the scrub).—Already found on Aneityum, Epi and Espiritu Santo; also New Caledonia, Loyalty, Fiji, Society, Gambier and Marquesas Islands and Hawaii.—Vernacular name “Nooh-nempeli.”

**Cenchrus calyculatus** Cavanilles, Ic. v. 39. t. 463 (1799).

**E r o m a n g a** : Dillon Bay, common in rain-forest at sea level, no. 358, June 4, 1928 (tall grass about 1.25 m. high; seeds troublesome to clothing).—Already found on Espiritu Santo; also New Caledonia, Loyalty, Fiji, Cook, Society, Gambier, Caroline and Mariana Islands and Hawaii.—Vernacular name “Ularhai.”



**Coix lacryma-jobi** Linnaeus, Sp. Pl. 972 (1753).

**Tanna** : Lenakel, common in rain-forest clearings at 200 m., no. 118, March 6, 1928 (weed in native gardens).—Already found on Tanna; also New Caledonia, Queensland, Fiji, Tonga, Samoa, Society, Marshall, Solomon, Bismarck Islands, New Guinea and Malaysia.

**Miscanthus sinensis** Andersson in Oefv. Svensk. Vetensk.-Akad. Stockh. 1855, p. 166.

**Tanna** : Lenakel, common in rain-forest soil at 100 m., no. 39, Feb. 22, 1928 (tall cane 4–6 m. high; used by natives for arrows and roofs of houses).—Already found in Aneityum; also New Caledonia, Fiji, Tonga, Cook, Society Island and Malaysia.

**Centotheca latifolia** Trinius, Fund. Agrost. 141 (1820).

**Eromanga** : Dillon Bay, common in semi-cleared rain-forest at sea level, no. 338, May 29, 1928 (chewed by natives and applied to burns).—Already found in Aneityum and Tanna; also New Caledonia, Australia (Queensland, North Australia), Fiji, Tonga, Samoa, Cook, Society, Marquesas, Caroline, Mariana, Bismarck and Admiralty Island, New Guinea and Malaysia.—Vernacular name "Now-now."

#### CONIFERAE

**Podocarpus imbricatus** Blume, Enum. Pl. Javae, 89 (1827).

*Podocarpus cupressinum* R. Brown apud Mirbel in Mém. Mus. Hist. Nat. Paris, XIII. 75 (Geogr. Conif.) (1825), nomen.—R. Brown apud Bennett, Pl. Jav. Rar. 25, t. 10 (1838–52).

**Aneityum** : Anelgauhat Bay, common in rain-forest at 150 m., no. 849, Aug. 2, 1929 (up to 12 m. high; seed about 1 cm. long, 1 cm. in diam. resting on a fleshy growth 0.5 cm. long).—Already found on Aneityum; also Fiji Islands, Malaysia and Philippines.

**Agathis obtusa** (Lindl.) Masters in Jour. Roy. Hort. Soc. Lond. xvi. 197 (1892).

**Aneityum** : Anelgauhat Bay, common in rain-forest at 150 m., no. 706, Feb. 5, 1929 (large tree up to 40 m. high on well drained slopes where the soil is intensely volcanic and red, especially typical of the country where the Kauri is found on the islands; this specimen is remarkable for the small size of the cones and the irregular sunken places on their surface; the best timber tree for boat building in the southern hemisphere); common in rain-forest at 60 m., no. 760, Feb. 13, 1929 (giant tree; cones malformed); common in rain-forest at 100 m., no. 707, Feb. 19, 1929.—Already found on Aneityum and Eromango.—Determined by E. H. Wilson.



## CYCADACEAE

*Cycas circinalis* Linnaeus, Sp. Pl. 1188 (1753).  
**E r o m a n g a**: Dillon Bay, common in rain-forest and open country at 300 m., no. 400, June 8, 1928 (Cycad up to 10 m., high; fronds up to 2 m. long; fruit yellow, borne in fours).—Already found in the New Hebrides; also New Caledonia, Loyalty Islands, Australia (North Australia), Fiji, Tonga, Caroline, Mariana, Solomon, Bismarck and Admiralty Islands, New Guinea, Malaysia.—Vernacular name "No-mall."

This is perhaps the same species as that named *C. neo-caledonica*, by Linden (without description).

## PTERIDOPHYTA

DETERMINED BY E. B. COPELAND

## HYMENOPHYLLACEAE

*Trichomanes Boryanum* Kunze, Farnkräuter, 237 (1847).  
**A n e i t y u m**: Anelgauhat Bay, common in rain-forest at 150 m., no. 883, March 7, 1929 (about 15 cm. high). **B a n k s G r o u p**: Vanua Lava, common in rain-forest at 400 m., in rain-forest where the rain-fall reaches 250 inches per annum, no. 461, July 10, 1928.

*Trichomanes Bauerianum* Endlicher, Prodr. Fl. Norf. 17 (1833).  
**A n e i t y u m**: Anelgauhat Bay, common in gullies in rain-forest at 600 m., no. 864, March 5, 1929 (growing in shade at high altitudes). **T a n n a**: Mt. Tokosh Meru, common in rain-forest at 800 m., no. 164, March 15, 1928.

*Trichomanes meifolium* Bory apud Willdenow, Spec. Pl. V. 509 (1810).

**A n e i t y u m**: Anelgauhat Bay, common in rain-forest mountains at 750 m., no. 867, March 5, 1929.

*Trichomanes* sp.

**B a n k s G r o u p**: Vanua Lava, common on mountains in rain-forest at 300 m., where the rain-fall reaches about 250 inches per annum, no. 454, July 12, 1928.

The specimen which is sterile may belong to *T. aphebioides* Christ.

*Hymenophyllum formosum* Brackenridge in Bot. Wilkes U. S. Expl. Exp. xvi. 268, t. 32, fig. 3 (1854).

**A n e i t y u m**: Anelgauhat Bay, common in rain-forest at 750 m., nos. 868 and 871<sup>a</sup>, March 5, 1929 (small fern growing upon rain-forest trees).



## CYATHEACEAE

*Balantium*, an *B. dubium*?

*Aneityum*: Anelgauhat Bay, common in rain-forest at 150 m., no. 885, March 9, 1929 (large tree fern; trunk up to 1.5 m. high; fronds up to 2.8 m. long).

*Balantium stramineum* (Labill.) Diels in Engler & Prantl, Nat. Pflanzenfam. I.-4, p. 119 (1899).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 210 m., no. 859, March 4, 1929 (fronds up to 2.8 m. long; main stem growing close to the ground).

*Cyathea laciniata* Copeland in Univ. Calif. Publ. Bot. XII. 389 (1931).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 600 m., no. 876, March 5, 1929 (small tree fern up to 3.1 m. high; fronds up to 1.5 m. long).

*Cyathea leucolepis* Mettenius in Ann. Mus. Bot. Lugd.-Bat. I, 56 (1863).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 210 m., no. 861, March 4, 1929 (tree fern up to 6 m. high; fronds up to 3 m. long).

*Cyathea medullaris* (Forst.) Swartz in Jour. Bot. Schrad. 1800, pt. II. 94 (1801).

*Aneityum*: Anelgauhat Bay, common in rain-forest up to 210 m., no. 857, March 4, 1929 (tree fern up to 9 m. high; fronds up to 3 m. long). *Tanna*: Lenakel, common in rain-forest at 150 m., no. 54, Feb. 24, 1928 (tree fern up to 8 m. high; fronds 3-3.5 m. long).

## POLYPODIACEAE

*Dryopteris rubrinervis* (Mett.) Christensen, Ind. Fil. 289 (1905).

*Tanna*: Lenakel, common in rain-forest soil at 200 m., no. 61, Feb. 24, 1928 (large fern in gullies; fronds about 2 m. long).

Probably identical with *D. urophylla* Christens.

*Dryopteris urophylla* (Wall.) Christensen, Ind. Fil. 299 (1905).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 210 m., no. 858, March 4, 1929 (large fern; trunk small at base up to about 0.3 m. high; fronds up to 2.1 m. long).

*Dryopteris* sp.

*Aneityum*: Anelgauhat Bay, common in rain-forest at 210 m., no. 860, March 4, 1929 (main stem not more than 0.3 m. high; fronds up to 2.1 m. long).



**Dryopteris** sp.

**Tanna** : Lenakel, common in heavy rain-forest at sea level, no. 5, Feb. 20, 1929 (fern growing in clumps, 0.6–1 m. high).

**Dryopteris** sp.

**Tanna** : Lenakel, common in heavy rain-forest at sea level, no. 5, Feb. 20, 1928 (fern growing in clumps, 0.6–1 m. high).

**Polystichum aristatum** (Forst.) Presl, Tent. Pterid. 83 (1863).

**Aneityum** : Anelgauhat Bay, common in dense shade in rain-forest at 300 m., no. 847, March 2, 1929 (fronds up to 1 m. long).

**Campium lonchophorum** (Kunze) Copeland, comb. nov.

*Acrostichum lonchophorum* Kunze, Farnkräuter, pl. 2 (1840).

**Aneityum** : Anelgauhat Bay, common in rain-forest at 450 m., no. 893, March 9, 1929 (fronds up to 0.60 m. long).

**Dipteris conjugata** Reinwardt in Syll. Pl. Ratisb. II. 3 (1824).

**Aneityum** : Anelgauhat Bay, common on banks of rain-forest streams at 150 m., no. 916, March 17, 1929. **Erromanga** : Dillon Bay, common in rain-forest at 400 m., no. 325, May 29, 1928 (growing in clumps, about 60 cm. high).—Vernacular name “Nenn-parr” (under no. 325).

**Oleandra ciliata** Klotzsch apud Kuhn in Linnaea, xxxvi. 126 (1869).

**Aneityum** : Anelgauhat Bay, common at 750 m., no. 874, March 5, 1929 (fern climbing up trees; stem dark brown).

**Humata pusilla** (Mett.) Carruthers in Seemann, Fl. Vit. 335, (1873).

**Aneityum** : Anelgauhat Bay, common in rain-forest at 150 m., no. 855, March 4, 1929 (small climbing fern just appearing outside the moss on trees).

**Davallia solida** Swartz in Jour. Bot. Schrad. 1800, pt. II. 87 (1801).

**Aneityum** : Anelgauhat Bay, common in rain-forest at sea level, no. 835, March 1, 1929 (fern with an underground rhizome, sometimes growing on the trunks of trees).

**Microlepia speluncae** (L.) Moore, Ind. Fil. xciii. (1857).

**Tanna** : Lenakel, common in heavy rain-forest soil at sea level, no. 6, Feb. 20, 1928 (80 cm. to 1.25 m. high).

**Tapeinidium tenue** (Brack.) Copeland in Bernice P. Bishop Mus. Bull. LIX. 69 (1929).

**Aneityum** : Anelgauhat Bay, common in rain-forest at



150 m., no. 894, March 9, 1929 (fern growing on ground; fronds up to 0.6 m. long).

**Dennstaedtia samoensis** (Brack.) Moore, Ind. Fil. 307 (1861).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 150 m., no. 884, March 9, 1929 (tree fern with small trunk about 0.45 m. high; fronds up to 3 m. long).

**Lindsaya decomposita** Willdenow, Sp. Pl. v. 425 (1810).

**B a n k s G r o u p** : Vanua Lava, common in rain-forest at 700 m., no. 458, July 10, 1928.

**Athyrium accedens** (Bl.) Milde in Bot. Zeit. 1870, p. 353.

**T a n n a** : Lenakel, common in rain-forest at 150 m., no. 133, March 8, 1928 (about 1 m. high).

**Athyrium** sp.

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 600 m., no. 877, March 5, 1929 (tree fern about 2.5 m. high; fronds up to 2 m. long).

**Athyrium** sp.

**T a n n a** : Lenakel, common in rain-forest soil at 200 m., no. 55, Feb. 24, 1928 (large fern; fronds about 2-2.5 m. long).

**Asplenium affine** Swartz in Jour. Bot. Schrad. 1800, pt. II. 56 (1801).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 150 m., no. 888, March 9, 1929 (fern growing on trees or on the ground; fronds 1 m. long).

**Asplenium amboinense** Willdenow, Sp. Pl. v. 303 (1810).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 210 m., no. 838, March 2, 1929 (small-leaved fern growing on small trees in dense shade).

**Asplenium brachycarpum** (Mett.) Kuhn in Linnaea, xxxvi. 104 (1869).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 600 m., no. 878, March 5, 1929 (small tree fern up to 1.5 m. high; trunk 45 cm. high; fronds up to 1 m. long).

**Asplenium laserpitiifolium** Lamarck, Encycl. Méth. II. 310 (1786).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 300 m., no. 848, March 2, 1929 (fronds up to 1.5 m. long). **T a n n a** : Lenakel, common in rain-forest at 100 m., no. 71, March 1, 1928 (about 1 m. high).



*Asplenium nidus* Linnaeus, Sp. Pl. 1079 (1753).

**B a n k s G r o u p** : Vanua Lava, common in rain-forest at sea level, no. 444, July 12, 1928 (growing on trees, common throughout the group).

*Asplenium* sp.

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 300 m., no. 887, March 9, 1929 (growing sometimes on trees, sometimes on rocks; fronds up to 0.6 m. long).

*Blechnum gibbum* (Labill.) Mettenius in Ann. Sci. Nat. sér. 4, xv. 68 (1861).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 210 m., no. 856, March 4, 1929 (small tree fern up to 1.5 m. high, bearing distinct sterile and fertile fronds; fronds up to 1.3 m. long).  
**T a n n a** : Ikiti, common along rain-forest streams at 100 m., no. 171, March 16, 1928 (small tree fern up to 1.5 m. high; growing in clumps with 10 or more stems in one clump).

*Blechnum opacum* (Baker) Mettenius in Ann. Sci. Nat. sér. 4, xv. 69 (1861).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 600 m., no. 879, March 5, 1929 (small fern bearing distinct sterile and fertile fronds).

*Blechnum Patersoni* (R. Br.) Mettenius, Fil. Hort. Bot. Lips. 64, t. 4, figs. 4-10 (1856).

**T a n n a** : Mt. Tokosh Meru, common in rain-forest at 300 m., no. 156, March 15, 1928 (about 1 m. high).

*Sphenomeris chusana* (L.) Copeland in Bernice P. Bishop Mus. Bull. LIX. 69 (1929).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 180 m., no. 891, March 9, 1929 (growing on the ground; fronds up to 0.65 m. long).

*Aspleniopsis decipiens* Mettenius apud Kuhn, Chaetopt. 325 (1882).

**A n e i t y u m** : Anelgauhat Bay, common in rain-forest at 750 m., no. 870, March 5, 1929 (small fern up to 15 cm. high).

*Cheilanthes hirsuta* (Poir.) Mettenius in Abhandl. Senckenb. Naturf. Ges. v. 25, n. 17 (1859).

*Notholaena hirsuta* (Poir.) Desvaux in Jour. de Bot. Appl. 1. 93 (1813).

**A n e i t y u m** : Anelgauhat Bay, common in the open along seashore at sea level, no. 928, March 17, 1929.



*Adiantum aneitense* Carruthers in Seemann, Fl. Vit. 346 (1873).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 150 m., no. 889, March 9, 1929 (fronds up to 0.65 m. long).

*Adiantum diaphanum* Blume, Enum. Pl. Jav. 215 (1828).

*Tanna*: Lenakel, common on sides of gullies in rain-forest at 200 m., no. 56, Feb. 24, 1928 (very small fern).

*Pteris comans* Forster, Fl. Ins. Austr. Prodr. 79 (1786).

*Aneityum*: Anelgauhat Bay, common on banks of creeks in rain-forest at sea-level, no. 719, Feb. 9, 1929 (fronds up to 3 m. long).

*Pteris ensiformis* Burmann, Fl. Ind. 230 (1768).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 150 m., no. 904, March 11, 1929 (up to 0.6m. high).

*Pteris tripartita* Swartz in Jour. Bot. Schrad. 1800, pt. II. 67 (1801).

*Aneityum*: Anelgauhat Bay, common along streams in rain-forest at 150 m., no. 892, March 9, 1929 (fronds up to 2.8 m. long).

*Vittaria lineata* (L.) Smith in Mem. Acad. Sci. Turin, v. 421, t. 9, fig. 5 (1793).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 150 m., no. 934, March 17, 1929 (up to 0.3 m. high; growing on bark of trees).

*Hymenolepis mucronata* Fée, Gen. Fil. 82 (1850-52).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 210 m., no. 890, March 9, 1929 (climbing upon trees).

*Polypodium blechnoides* (Grev.) Hooker, Sp. Fil. iv. 180 (1862).

*Aneityum*: Anelgauhat Bay, common in rain-forest near the summit of the mountain at 450 m., no. 886, March 9, 1929 (small fern).

*Polypodium scolopendria* Burmann, Fl. Ind. 232 (1768).

*Eromanga*: Dillon Bay, common in rain-forest at 300 m., no. 380, June 7, 1928 (small fern).—Vernacular name "Nemkar woramel."

*Selliguea feeioides* Copeland in Bernice P. Bishop Mus. Bull. LIX. 94 (1929).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 750 m., no. 875, March 5, 1929 (climbing upon trees). *Tanna*:



Mt. Tokosh Meru, common in rain-forest at 800 m., no. 165, March 15, 1928 (climbing along the trunks of trees).

*Cyclophorus acrostichoides* (Forst.) Presl, Epimel. Bot. 130 (1849).

*Aneityum*: Anelgauhat Bay, common in rain-forest at sea level, no. 714, Feb. 9, 1929 (growing on tree trunks and climbing by means of runners; common throughout the islands). *Tanna*: Lenakel, common in rain-forest at 200 m., no. 101, March 5, 1928 (parasitic fern).

*Drynaria rigidula* (Sw.) Beddome, Ferns Br. Ind. t. 314 (1869).

*Aneityum*: Anelgauhat Bay, common in rain-forest at sea level, no. 834, March 1, 1929 (growing on trees; stem shielded by a brown heart-shaped growth).

#### GLEICHENIACEAE

*Gleichenia Brackenridgei* Fournier in Ann. Sci. Nat. sér. 5, XVIII. 269 (1873).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 750 m., no. 873, March 5, 1929 (large fern up to 1.8 m. high; a much smaller form is common on the waste-lands).

*Gleichenia linearis* (Burm.) Clarke in Trans. Linn. Soc. ser. 2, I. (Bot.) 428 (1880).

*Tanna*: Mt. Tokosh Meru, common in rain-forest at 800 m., no. 161, March 15, 1928.

*Gleichenia oceanica* Kuhn, Verh. Zool.-Bot. Ges. Wien, XIX. 583 (1869).

*Tanna*: Mt. Tokosh Meru, common in rain-forest at 800 m., no. 160, March 15, 1928.

#### SCHIZAEACEAE

*Schizaea dichotoma* (L.) Smith in Mem. Acad. Sci. Turin, v. 422, t. 9, fig. 9 (1793).

*Aneityum*: Anelgauhat Bay, common in rain-forest at 150 m., no. 918, March 17, 1929 (small plant up to 0.60 m. high). *Erroma nga*: Dillon Bay, common in rain-forest at 300 m., no. 286, May 23, 1928 (plant with single stem 40 cm.); common in poor red soil, bracken country at 400 m., no. 355, June 1, 1928 (small plant 20 cm. high).—Vernacular name "Nempari" (under no. 286).

According to the collector's note under no. 286 this plant has a remarkable history; if worn when a war was on in old heathen